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Chattanooga Choo-Chooses CDC Savings

By Patrick Ward
Of the CW Staff

CHATTANOOGA, Tenn. – The Chattanooga DP department has replaced much of its IBM 370/145 system's memory and peripherals with compatible products from an independent vendor and saved money in the process.

The department gained 256K of add-on memory, an additional tape drive and printer and about 240K of extra disk capacity from Control Data Corp. last fall for $247 more a month in lease payments.

"We knew we needed additional capacity, but we didn't have the money to get it from IBM," Howard Lewis, the city's director of management information systems, explained.

The price of an additional 256K of IBM add-on memory alone would have come to over $3,000/mo, he said. Another IBM printer and controller would have cost about $1,500/mo more.

When the city first planned to acquire the 145, Lewis recommended purchasing the CPU and leasing the peripherals. "I felt from the start that we could do better with non-IBM peripherals," he said.

However, since the city needed the 145 right away and lacked knowledge about other peripherals, IBM gear was brought in as an interim measure.

Delayed by Lawsuit

But the IBM peripherals were destined to stay longer than that because the city was hit with a lawsuit for acquiring the 145 without open bidding [CW, Feb. 19].

"We were under court order not to enter into any additional contracts with IBM" until the injunction was lifted early last year, Lewis said. The city's lawyers also advised against acquiring any other types of DP equipment during that time, he added.

When the injunction was lifted, several memory and peripheral equipment vendors came to call on the city. Eventually Chattanooga narrowed the

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CW Photo by P. Ward

Kenneth D. Cardwell sits at the console of MMLI's Amdahl 470V/6.

Mass. Firm Weighs Risks, Buys One of First 470s

By Patrick Ward
Of the CW Staff

SPRINGFIELD, Mass. – After carefully weighing the advantages and the risks, the Massachusetts Mutual Life Insurance Co. (MMLI) here decided to become the first commercial user of an Amdahl Corp. 470V/6 computer.

The decision to go to a 470V/6-based hardware configuration rather than one based on an IBM 370/168 allowed MMLI to afford a better backup computer and to save $1 million over the next five years besides, MMLI officials said.

MMLI chose the Amdahl system only after evaluating both the hardware and the likely longevity of the vendor. It persevered with that decision even though IBM offered to fly up John F. Akers, president of IBM's DP Division, to talk to MMLI's chairman about the choice.

"First we actually had to convince ourselves that [the 470V/6] was a better piece of hardware," according to David J. Blackwell, vice-president and chief of MMLI's Information Services Division.

"That actually came relatively early in the game," because of reports coming back from the University of Michigan about its

(Continued on Page 4)

Honeywell Officials Hint Vendor May Relax Software Policy Stand

By Nancy French
Of the CW Staff

Honeywell Information Systems' (HIS) attitude toward enforcing its software license requirement for second owners of Honeywell systems may be crumbling, according to remarks made informally by company officials recently.

HIS will not withdraw its software licensing policy, but the firm is "studying" the problem, Richard Douglas said recently in New York City. Douglas is HIS vice-president for DP operations.

Contacted later at his office, Douglas reiterated that stand but admitted management is "looking at certain aspects" of the policy. Pressed for details, Douglas refused to say more.

And at a users meeting in Phoenix recently, Rhidley Rind, director of HIS' western operations, said the firm would be willing to negotiate with any users or groups of users and their lawyers on legal questions related to the software licensing policy.

The software policy was detailed in a letter sent to users last summer that "reminded" them all software provided with HIS systems is nontransferable and cannot be resold when the system is resold. Users who buy HIS systems from non-Honeywell sources must pay a basic license fee [CW, Aug. 6].

Won't Hold Up in Court

Meanwhile, an attorney familiar with the situation contended HIS' proprietary claims to software and maintenance documentation would not stand up in a court of law.

Robert Bigelow, who edits *The Computer Law and Tax Report* and practices law with Hennessy and Kilburn, a Boston firm, said that while Honeywell relies principally on copyrights as protection for its software, it has not protected that software in the manner called for by law.

Under the law, notice of any copyright must be affixed to the copyrighted material in a manner perceptible to the human eye, Bigelow said.

Users have said that until recently HIS software has been distributed quite freely on disk without any perceptible copyright notice. Such failure to protect copyrighted material with appropriate notices ends the holder's right and places the material in the public domain, where anyone can use or copy it freely, Bigelow explained.

Even if Honeywell had complied with this requirement, no court has yet decided that a program can be copyrighted, he added.

Another point made by Bigelow concerned the manner in which such systems were originally sold. According to Bigelow, HIS is arguing it is only licensing its software. However, the firm sold the hardware and sold it bundled – a point emphasized by Clarence W. Spangle, HIS' president, during his testimony in the government's antitrust trial against IBM.

If Honeywell's operating systems are considered tangible property that has been sold, an effort on Honeywell's part to get a fee from the second user or to force an owner to sell a system without the software may expose Honeywell to claims of

(Continued on Page 3)

Wants to Return H3200s

User Hits HIS With Suit Charging Fraud

By Molly Upton
Of the CW Staff

NEW YORK – Integrated Computer Services, Inc. (ICS) has filed a suit against Honeywell Information Systems, Inc. (HIS) charging the hardware vendor with fraud, misrepresentation, negligence and breach of contract.

HIS, in turn, filed an action in the Federal Court of the Southern District of New York for $1.2 million plus interest which charged nonpayment of promissory notes.

An ICS spokesman indicated the firm intends to amend its complaint to include punitive damages.

ICS, a service bureau with several Honeywell systems, claimed it incurred lost business and increased expenses totaling $2 million because of its upgrade to two Model H3200s which failed to perform as specified.

ICS seeks to return the two 3200s, to be reimbursed for the 2200, 1200 and 1050 it traded in when it took the 3200s and to cancel agreements and notes totaling $1.1 million it owes HIS, the suit said.

Because of the "inefficiencies and inability of the H3200s to operate in accordance with the representations and warranties . . . [ICS] was unable to maintain the production schedules required" by its customers and "accept additional business that was available" to it, ICS charged.

The ICS suit, filed in the Supreme Court of the State of New York, County of New York, also named as codefendants Tony Coviello and Michael J. Jackson, HIS branch marketing manager and senior marketing representative respectively.

A Honeywell spokesman said the firm declined comment while the suit is in litigation.

ICS claimed it agreed to pur-

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Calif. Privacy Bill Covers Private Sector

By Nancy French
Of the CW Staff

SACRAMENTO, Calif. – The California State Assembly, by a vote of 55-2, has passed a Privacy Act covering computerized personal information processing in the private sector as well as in its state and local government agencies.

The bill omitted manual systems because "it's the mysterious computer that people are concerned about. We're not worried about every shopkeeper who keeps some kind of card file on his charge customers," according to Assemblyman Mike Cullen (D-Long Beach), who introduced the bill.

"If I included manual systems, I'm sure I never would have gotten a privacy bill passed," he said.

Under the provisions of the bill, every business or government agency that maintains an automated personal information system must file a notice of the system's existence and use in broad terms, including the nature of the information it contains, who may obtain that information and the name, address and phone number of the data manager.

Why does the bill cover the private sector? 'What's good for the goose is good for the gander.'

Any citizen is entitled to obtain a "printout" of the information a business or government agency is maintaining on him, as long as the file can be accessed by name or Social Security number, for a fee of not more than $5.

However, no maximum time limit in which a file manager must respond was written into the bill.

If the individual data subject finds incorrect information in his file, he can notify the data manager and request the information be corrected.

In the event the data subject and the data manager disagree on the requested change, the individual can submit a statement of 100 words or less which must be distributed to all recipients of his file for a period of three years.

Individuals who are asked to provide information that would be stored in a data bank must be told how that data will be used, who can obtain it, what laws require the individual to disclose the requested information and what the consequences of not providing the information would be.

"It may be that the individual would not be able to obtain a charge account," Cullen pointed out.

The bill exempts law enforcement records as well as matters pertaining to discovery in judicial proceedings. It also places no limits on use of the Social Security number or other numerical identifiers.

When asked why he included the private sector in what might become the first California privacy law, Cullen said, "I believe what's good for the goose is good for the gander."

The Cullen bill does not interfere with existing information laws – any information which was previously confidential remains confidential; anything which was previously public remains public, Cullen pointed out.

The bill provides both civil and criminal penalties, he added.

DP employees who disseminate information to unauthorized individuals and unauthorized persons who attempt to obtain information from DP employees will be subject to a $5,000 fine.

Service Bureau Suing Honeywell Wants to Return Two H3200s

(Continued from Page 1)

chase the 3200s because it was told by HIS these would "more than double" its processing capabilities for a monthly increase between $5,000 and $6,000.

When benchmarks were run on a 3200 system HIS said was "nearly identical" to the one proposed for ICS, processing time was reduced from 10 hours to about 4 hours, ICS said.

ICS signed agreements for the hardware, which was delivered in the first quarter of 1975.

ICS had used a Mod I operating system on its previously installed systems, and HIS indicated it could use the Mod I Simulator with the 3200's operating system, the OS2000, ICS said.

HIS told the service bureau this simulator would "translate instructions issued by all programs then used by plaintiff into standard OS2000 instructions," the service bureau claimed.

In addition, the OS2000 software with the Mod I simulator was said to be completely compatible with the Mod I operating systems and no program changes would be required by ICS in converting, ICS alleged.

ICS relied on the representations of HIS, the complaint said, adding the defendants knew these representations and warranties were "false or that they were made without any actual knowledge as to whether" these "were true or false and without any reasonable grounds to believe them to be true."

HIS should have warned ICS of the inherent dangers in converting from one system to another and that a service bureau "is not an appropriate environment for any operating system as sophisticated as OS2000," ICS said.

Also, HIS should have notified ICS of the "dangers of attempting to run Mod I programs, in an H3200/OS2000 system, in a case where the Mod I programs were not revised to current HIS releases of Mod I software," the suit said.

The complaint indicated that since HIS failed to tell ICS these facts, "there was no 'meeting of the minds' and no real agreement between the parties."

HIS was unable to make the system perform as specified, ICS said, and thereby, breached its contract.

When ICS notified HIS in March 1975 the systems were not working as expected, HIS asked for additional time. In August, however, ICS notified HIS it was rescinding the agreements.

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As U.S.' Top DP Buyer

GSA Attacks HIS Software License Policy

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – The government's top DP buyer spoke out recently against Honeywell Information Systems' (HIS) software licensing policies and other "restrictive" marketing practices.

"We feel strongly the Honeywell position may be an exaggeration of the concept of proprietary rights," Theodore Puckorius, commissioner of the General Services Administration's (GSA) Automated Data and Telecommunications Service, told the Computer Dealers Association here.

But, he added, "it is a matter for the courts to decide."

Puckorius said he believes "it is important to restate our disagreement with the Honeywell position regarding restrictions on use by us or third parties of so-called proprietary software, manuals and other support.

"We intend to press our position wherever challenged," he remarked.

Since the government considers itself a single customer despite the large number of departments, agencies, commissions and military organizations that actually comprise it, equipment purchased and used in one federal agency can be transferred and used by another without paying an additional licensing fee for use of the operating system that goes with the system, Puckorius said in conversation afterwards.

Although the government appears to be immune to HIS' software licensing policy, it is not immune to the company's proprietary attitude toward maintenance materials and its policy on recertification of maintainability when equipment is moved from one agency to another, he said.

However, as the government begins to do more business with third parties – for both equipment and services – it may well become a problem, he said.

HIS is contending certain maintenance documentation is provided as part of its maintenance contract, not the equipment purchase contract. Those who choose not to sign maintenance contracts with the mainframer are therefore not entitled to the documentation.

GSA officials believe, however, that the documents provided to an agency for use with a purchased computer mainframe are the property of the government, regardless of who services the equipment.

Puckorius said the industry does not operate in a "consistent mode on some of these issues.

"IBM, because of past consent decrees, tends to bend over backward" to be cooperative in recertification of equipment maintainability and charging only first users for operating systems," he said.

"Honeywell and Univac, who must think of their profit and loss picture, do not," he said.

HIS May Relax Software Stand, Two Company Officials Indicate

(Continued from Page 1)

treating customers of the same class differently, a violation of the Robinson-Patman Act, Bigelow said.

Honeywell users, as individuals and through their user organizations, have expressed objections to license fees on operating systems charged to users who purchase their equipment from sources other than Honeywell.

The policy is seen by many as having a serious impact on a large number of Honeywell users. According to the most recent figures available from International Data Corp., a market research firm, 42% of HIS users (a statistic based on number of systems rather than value of systems) own their own systems or lease them from third parties, rather than HIS.

A user in Chicago described the difficulties he encountered trying to buy out of his lease as follows:

The user signed a lease for an H 2040 in 1972, which at that time was valued at about $400,000. When he asked for a buyout price recently, Honeywell officials quoted him a price 15% above the Schedule A buyout price, telling him the fair market value was greater than that indicated in Schedule A.

Checking with the used equipment dealers, he learned his system would be worth only about half the Schedule A price. Consequently, he is still leasing the machine.

Users also have objected to HIS' contention that vital maintenance documentation is "proprietary" and therefore the property of HIS.

This policy becomes a problem when a user wishes to switch from Honeywell maintenance to a third party contract – a decision only an owner would make. In some cases, Honeywell customer engineers have tried to remove maintenance documents, causing havoc in the DP center [CW, Sept. 10].

Sources in the field have been reporting that some Honeywell users who have purchased their mainframes from computer dealers and purchased only their peripherals from Honeywell are not being billed for software licenses.

Douglas said this type of "special deal" was "clearly out of policy. [Honeywell] people will be dismissed for breaking policy if I find out about it," he said.

Douglas said the software licensing agreements were "designed to protect the interests of our customers and to provide for those, at least who choose it, a level of service from Honeywell.

"We can't afford to provide service to everyone forever for nothing and, unfortunately, a lot of people basically disagree with that policy. But I would point out that there have been a number of departures from this industry and Honeywell is not going to be one of them."

Independent's Peripherals Cut City's Cost of Running 370/145

(Continued from Page 1)

choice to peripherals packages from Telex Corp. and CDC.

Chattanooga officials visited the sites of four of each vendor's users, asking questions about support, maintenance and downtime, Lewis said.

"I didn't really find any unhappy users anywhere I went," he said, but the CDC gear seemed at least equal in reliability and it was slightly less expensive.

'Fantastic' Throughput

Under the package deal, Chattanooga took out half of the 145's 512K main memory and added 512K of CDC memory for a total of 768K.

The city also replaced its four IBM 3420 tape drives with five slightly faster CDC units and substituted eight CDC 3301 (100M-byte 3330-I equivalents) for eight IBM 3340 data module drives, which had 70K storage each.

The CDC units take no more space than the 3340s, Lewis said. The DP department used IBM's Device Independence package to accomplish the conversion from the IBM 3340s to the CDC drives over a weekend.

The city also added a CDC 28211 1,200 line/min printer and retained its IBM 1403 printer.

The equipment change, particularly the memory, brought a "fantastic" throughput increase, Lewis said. Some batch jobs that previously took about two hours now run in 40 minutes, he said.

The city DP department used to be print-bound, typically running eight to 10 hours behind its printing schedule. With the addition of the second line printer, "we are always up to date," Lewis said.

So far the DP department has experienced good cooperation between the IBM and CDC maintenance crews, Lewis said. Reliability of the CDC disk and memory has been "great" and "satisfactory" with the tapes, he concluded.

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Firm Weighs Risks, Acquires First Commercial 470

(Continued from Page 1)

production experience with an Amdahl system [CW, Oct. 15], he said.

However, the insurance firm's financial people said "there was some risk [Amdahl] would not survive over a seven-year period," Blackwell said, but added "we obviously think it is going to survive. We thought the price/performance advantage far outweighed the risk," he said.

And if Amdahl did leave the scene, Japan's Fujitsu, which backs Amdahl financially and builds a version of the 470V/6 itself, would step in as the supplier of parts and maintenance, Blackwell said.

Amdahl users risk having to forego some new IBM hardware products if IBM offers those products as bundled packages including software, Blackwell said.

In trying to gauge whether this might happen, "we tried to look at IBM's position and see how far it could disrupt its existing customer base," he said.

"IBM cannot, in my mind, afford to do to its existing 168 customers what it did to its 165 customers," he said. "The worst case would be that we'd end up with static software, and that can be lived with."

"It was an obvious decision to choose the 470V/6," Blackwell said. "You wonder how people could make the other decision, but after all, some people don't want to leave the womb."

If all users "adopted a wait-and-see attitude, there wouldn't be anything to see," added Neil W. Bennett, associate director of the technical support department.

On a scale that puts a 370/158's CPU speed equal to 1, a 168 would have a ranking of 3.61 and a 470V/6 would range from 4.5 to 5.4, Blackwell said.

Yet a 5M-byte 470V/6 with the standard 16 channels costs $5 million, compared with the $6.8 million cost of the 5M-byte 11-channel 168 MMLI would have wanted, according to Kenneth D. Cardwell, MMLI second vice-president.

MMLI's hardware needs revolve around its on-line "Respond" network, which was designed to provide a "full service" data entry, inquiry and sales support capability in agents' offices across the country.

The network was occupying 90% of a 3M-byte 370/158 last spring, Caldwell said. MMLI had a second 158 handling batch and IBM's Time Sharing Option (TSO).

A 360/65 supported ASP and batch work; a second 65 supported APL teleprocessing test and batch work.

MMLI was planning to increase the volume of on-line applications by about a third this spring. The 158 would clearly not be up to the added load, Cardwell said.

MMLI thought about linking its two 158s into a multiprocessor system, but that would not suffice for the five-year span MMLI wanted and would also require complex software.

An intelligent front end for the 158 was another possibility considered, as was distributed processing.

Still another possibility was to replace the dedicated 158 with a 370/165 and keep the two 360/65s. "But then we would have had three obsolete CPUs on the floor instead of two," Bennett said.

In August, MMLI decided a 168 would be its best bet and won management approval to buy one. But then IBM boosted its purchase prices by 4% and Massachusetts decided to enact a 2% sales tax increase.

These moves increased the 168's cost by 6%, beyond MMLI's authorized spending limit, unless IBM could deliver the 168 within 90 days. That appeared unlikely, Cardwell said.

By going to the Amdahl 470V/6, MMLI was able to afford to keep one of its 158s as a backup machine and lease the other out, Cardwell pointed out. If MMLI had chosen the more expensive 168, it would have had to lease out both 158s and use the two less costly 65s to backup the 470, he said.

The 158 "was clearly a better alternative" as a backup machine because it can support many more of the network functions if the 470 goes down, Cardwell said.

The 470 was installed on Dec. 27. "We've been very pleased with the ease with which it went in and the quality of the Amdahl people," Blackwell said.

MMLI has now loaded the network onto the 470 and expects to add IBM's TSO and batch work onto the 470 soon.

Compatibility of 470, IBM CPUs Called 'Real'

By Patrick Ward
Of the CW Staff

SPRINGFIELD, Mass. – "The compatibility is real" between the Amdahl Corp. 470V/6 and the IBM computers installed at the Massachusetts Mutual Life Insurance Co.'s (MMLI) data center here, according to Bob Bologna, director of the firm's Information Services Division.

"From an operational standpoint it's just another processor to us," he said. "We disconnected a 360/65 and plugged in the 470 in its place."

Weekend Workup

Amdahl installed the 470 on the Saturday after Christmas and had the machine ready for use Monday morning, he said. MMLI was running production by Tuesday morning.

There was 93% uptime in the first week of installation and 98% uptime recently, Bologna said. The system runs under MVT Release 21.8.

Since the Amdahl machine is air-cooled, unlike IBM's 370/168, MMLI saved $40,000 to $50,000 on chilled water facilities outright, he said.

"From a space standpoint we have been able to put in extra IBM 3330 drives and keep a 158 in the same area. If we had brought in a 168 instead, we would have had to move the 158," Bologna said.

Amdahl's maintenance response "has been outstanding in terms of resolving hardware and software bugs," he said.

"We have one full-time software support person and two full-time hardware people," he said. "We plan to have on-site maintenance during the network hours and use the Amdahl Amdac remote maintenance service at night.

'Tremendous Tool'

"I think remote diagnostics are a tremendous tool," Bologna said. They put the user into contact with people who have debugged previous sites, he noted.

The remote service connects a minicomputer on MMLI's 470V/6 to another minicomputer in Amdahl's Sunnyvale, Calif., headquarters, where technicians can take over control of the MMLI machine.

"I'm on a trip with this machine right now. It's really fantastic as far as I'm concerned," Bologna said.

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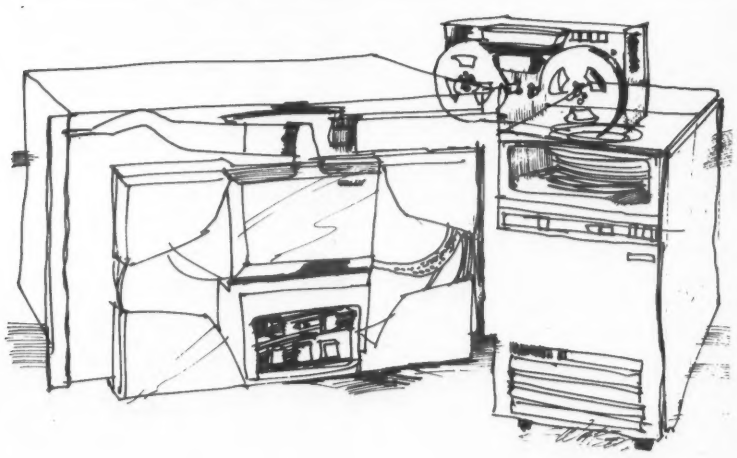

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Member of National Commission

Goldwater Lauds Privacy Act as Step Toward Control

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – The Privacy Act of 1974 has been "an initial thrust toward assuring Americans control over their personal lives," Rep. Barry Goldwater Jr. (R-Calif.) said in an interview here recently.

Recalling events that have occurred since the law's passage a year ago, he added, "Privacy has been catapulted to the forefront in the minds of Americans and our government as an issue of great importance."

As evidence, Goldwater cited the Justice Department's decision to postpone further development of the controversial FBI-controlled message-switching system, the military's elimination of SPN numbers on veteran's personnel records and the shelving of Fednet.

Questioned about the uproar heard earlier this fall when congressional caseworkers were refused information by government agencies on privacy grounds in cases where their inquiries were being made on behalf of specific constituents [CW, Oct. 15], Goldwater said "we're going through a settling-in period."

Describing the incident as a "manifestation of frustration," Goldwater explained "this is the kind of frustration people feel when they have to learn to do things differently."

The flap was permanently resolved by amending the list of routine uses to which personal records can be put.

Work of Commission

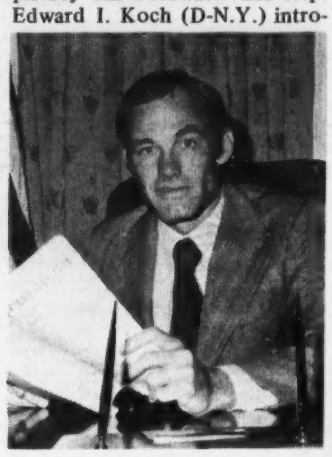
Goldwater, who serves as a commissioner on the Privacy Protection Study Commission, is looking to that body to help develop the principles upon which to base privacy legislation for organizations in the private sector.

Established by the Privacy Act of 1974 to study recordkeeping systems in the private sector and recommend appropriate legislation to Congress, the Privacy Protection Study Commission has just concluded hearings on the sale and use of mailing lists.

Results of those hearings, together with staff-written issue papers on the recordkeeping practices of specific types of organizations, will be considered for further study in January. Organizations presently under investigation by commission staff members are credit grantors, insurance companies, investigative consumer reporting agencies and social services and housing providers.

Before its expiration in September 1977, the commission is expected to assemble a body of knowledge for use in recommending additional privacy safeguards for citizens whose records are held by such organizations, Goldwater said.

In the meantime, "1984," the privacy bill Goldwater and Rep. Edward I. Koch (D-N.Y.) introduced in the House of Representatives earlier this year, will not be "pushed.



Rep. Barry Goldwater Jr. believes "the people who want the information" should be the ones to pay for privacy protection.

"After the commission issues its reports, we may find one of two things: first, that a law that protects citizens from privacy abuses by private sector organizations is unnecessary or, on the other hand, that we should rewrite 1984 based on information turned up over the two-year study period," Goldwater explained.

As for the effectiveness of the commission concept itself, Goldwater granted that, given the same budget, a congressional committee could do the job just as well. However, he said he likes the commission approach "because it allows for more public involvement."

Who Should Pay?

On the question of who should pay for privacy protection, Goldwater was quick to answer "the people who want the information – the people who want to check credit, for example. The cost of protecting privacy should be just another cost of doing business."

Attracting customers who are good credit risks is to the retailer's advantage, and obviously the retailer is going to benefit from having accurate credit records, he said.

"Besides, I don't think it's going to cost all that much," he added, "but until we know, I don't think it's going to do any good to get excited about it."

Goldwater said he misses the leadership and ideas provided by the now-retired Sen. Sam Ervin (D-N.C.) in the privacy area.

"Sen. Ervin," who was chairman of the Senate Judiciary Committee as well as its Subcommittee on Constitutional Rights, "was a driving force behind this issue, and it doesn't appear that the senator who inherited his subcommittee shares Ervin's priorities or his understanding of the issue," Goldwater said, referring to Sen. John Tunney (D-Calif.).

While Goldwater expressed disappointment in Congress' failure to get the criminal justice information privacy bill passed, he noted the strong support privacy receives from the Executive Branch.

Goldwater credited President Ford's "commitment and appreciation for the concept of individual privacy for the changing attitude toward privacy regulation within the Justice Department.

"It's a good and healthy sign," he said. "I only hope Congress can be equally responsible this year."

Goldwater Pans Licensing Concept, Urges Recognition of DPers' Role

WASHINGTON, D.C. – Licensing is not the way to instill a greater sense of professionalism and integrity in DP practitioners – these qualities can only be developed by giving people the recognition they deserve, Rep. Barry Goldwater Jr. (R-Calif.) said in an interview here recently.

Programmers and their DP associates should be elevated to a more prominent position within business and government because they control a more and more vital function in those organizations, he said.

Recognizing the significance of their role is better than licensing, he explained, because greater recognition gives a person a sense of responsibility.

Responsibility, in turn, encourages self-regulation – a code of ethics – and this is far more effective than having the state license programmers and then act as a policeman, he said.

"Licensing won't give you any greater security either because someone who is going to rip off his company or the government is going to do it, license or not," he said.

Comparing programmers with doctors and lawyers, both licensed professionals, Goldwater pointed out lawyers are licensed by their bar association. This involves peer review and pride of association, which is far more powerful than policing, he said.

Doctors who are licensed by the state, on the other hand, have no peer review, he said. The American Medical Association doesn't serve that function, he explained.

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Cuts Marks, Standings Feedback Time

System Figures Well in Olympic Skating Competition

By Toni Wiseman
Of the CW Staff

INNSBRUCK, Austria – While Alexander Gorshkov and Ludmila Pakhomaz of Russia and Colleen O'Connor and Jim Millns of the U.S. were skating their way to Olympic medals last week, a time-sharing system was at work keeping viewers and competitors aware of scores and standings as the event progressed.

The system was used in the recently completed U.S. Figure Skating Championships in Colorado Springs, Colo., and is now being used at the Winter Olympics here. It has slashed the time between performance and results and is providing something new – intermediate standings.

The program was developed by Al Beard, a senior systems engineer with Honeywell Information Systems (HIS) in Phoenix. Beard, who is also a member of the Executive Board of the U.S. Figure Skating Association, developed the program in his spare time, with processing time donated by HIS.

Three U.S. companies worked jointly to implement the system, Beard said. HIS made available processing time on a Honeywell 6080; Computer Transceiver Systems donated the portable remote computer terminals used as input devices; and Tymshare Corp. made available its data communications network, which links the terminals to the 6080 in Minneapolis.

In addition to the National competition, the system was used in regional and sectional competitions around the country.

The system can be used at any rink where a phone is installed, Beard said.

In judgment sports such as figure skating, diving and gymnastics, there is no obvious winner such as in hockey or track, he said. Results are determined by the scoring opinions of experienced judges.

But between personal opinions and nationalistic feelings, international meets generate the possibility of a serious controversy everytime a figure skater does a double Axel, according to Beard.

Complexity a Problem

To avoid disputes, many judgment sports have developed elaborate scoring systems. The problem with these is their complexity.

They often involve lengthy weighting and decision-making algorithms, and can sometimes cause disputes of their own. The computer system eliminates this problem, Beard said.

The compulsory portion of figure skating, the "school" figures, constitutes 30% of the final scoring, with a figure "round" taking three to four hours to complete.

Up till now, no official standings were available throughout this long period. The marks for each individual figure were available, but current standings were not.

An operator at the 1976 Winter Olympics inputs scoring data at the figure skating competition.

With the new system, posting of marks is accompanied by the computer-generated current standings showing exactly who stood where throughout the figures round.

The figure skating scoring system is based on the majority principle. If a skater is awarded first place (top marks) by a majority of the judges, then the skater wins. Second place is awarded to the skater who a majority of judges placed second, and so on, according to Beard.

Scoring is divided into the judging phase and the computation phase. The judging phase is when the judges observe the skating and record their marks.

Computations are handled by a separate crew of people, called accountants, who add up the various marks, determine how each judge has placed each skater, see which skaters have majorities for which place, then apply the rules for place award.

These scoring algorithms, though complex, are well suited for computer processing, even when the operators are intimately familiar with skating, but know nothing about computers.

A man/machine interface consisting of a question-and-answer sequence has eliminated the obstacle of lack of technical know-how.

Many of the questions involve verifying that the computer is indeed doing what the operator wants, while the computer keeps careful track of the operator, checking input for legality and completeness.

Processing an Event

The processing of an event has three main phases. The first phase is event creation, which involves entering names, number of judges and event type.

Next, multiple instances of marks are keyed in and results computed. The third phase is event wrap-up, including final report and the generation of specially computed standings.

The command language for this system is a departure from normal time-sharing procedures. Rather than using alphabetic verbs or abbreviations, the commands to the program are numeric. The function "3-1", for instance, means "list the standings for the final round only."

The programs for the scoring were written in time-sharing Fortran IV. There are seven programs, executing in a chain overlay fashion. The event files are random binary files.

The entire file for an event is read into main store for processing, which consists of straightforward computations plus six to eight sort operations. Sorting in the main store only is the only way an acceptable speed could be obtained.

The source code is about 2,500 Fortran statements, most of which are used for the operator interface, error checking and report generation.

The actual scoring computations are called subroutines.

Correction

William White, past president of Honeywell Users Group (HUG), is the correct name of the person who described the resolution passed by the Coordinating Council of HUG which asked Honeywell Information Systems to rescind its policy of charging for software on second-hand machines [CW, Feb. 9].

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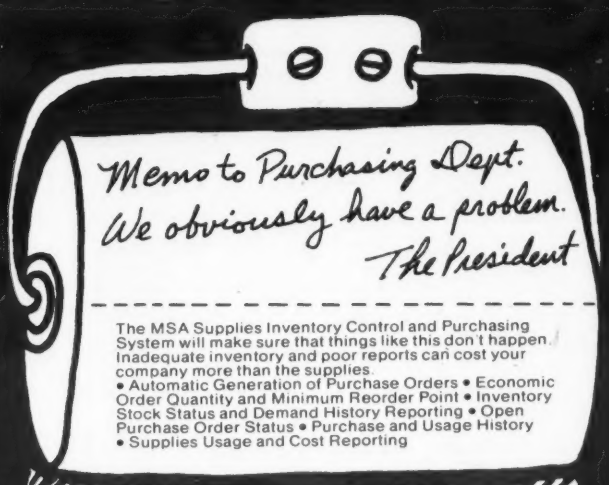

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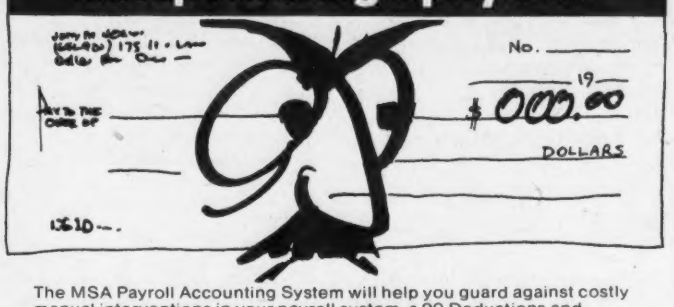

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Pa. 'Watergate' Feared

State Ends Phone Network Monitoring

By Catherine Arnst
Of the CW Staff

HARRISBURG, Pa. – A five-year program of "monitoring" all calls on this state government's telephone network was suspended in January after the program was revealed in local newspapers.

Fears of a Pennsylvania "Watergate" were the cause of the hue and cry raised over a system used essentially as "a management tool," James Wade, Pennsylvania's secretary of administration, said.

Computer printouts of calls over 20 minutes long were electronically monitored by Bell Telephone Co. and provided monthly since 1970 to the departments in the state government where the calls originated.

The printouts were produced from magnetic tapes sent by Bell to the state. Bell monitored every fifth call made on the state's Common Control Switching Arrangement (CCSA) telephone network and recorded the number called from, the destination's phone number, time, length of call and date.

Both the state and Bell said there was no possibility of any actual conversations being monitored.

The term "monitoring" sensationalizes the issue, Wade said. He described the program as surveying calls to determine how efficiently the state government's phone system was being used.

Bell has provided this service to CCSA users since 1962, Kenneth Brunjes of that company said. He mentioned the states of New Jersey, Virginia, Wisconsin, California and Washington, as well as many private firms, as users of the same service, which Bell calls an Automatic Message Accounting Sample.

It is a way to "optimize a network," Brunjes said, so that a customer will know whether it is being fully utilized.

Pennsylvania picked up the service at the suggestion of a Government Management Review Team. It was meant to aid department heads in determining personal abuse of the phone network, Wade said.

The tapes were wiped out each month and new information recorded on them, and there was no possibility of the information being stored from month to month, he said.

State Employees Aware

"State employees are very much aware of this monitoring," Wade said. He added that through this method the state has reduced the cost of its phone service to 27 cents per call.

Bell treated the tapes as proprietary information and used the normal safeguards used on all such information, Brunjes said.

Bell is sure there were no breaches of security: "We know we delivered the tapes to whom they were meant to go," he said.

The operation was suspended because "People are still suffering from the Watergate syndrome," Wade said. "We have a governor who is running for president, and the opposition is saying 'shades of Watergate.'

"The fundamental issue here is whether the state has the right to manage its own system," he concluded.

April Court Date Set for NCR Suit

DEDHAM, Mass. – The suit filed by a former Century 100 user against NCR Corp. is scheduled to come to trial sometime in April in Norfolk County Superior Court here.

The suit, brought by James Ferrara & Sons, Inc., a food wholesaler doing business as First United Supermarket Service, charged NCR with breach of contract and warranty, fraud and negligent design and manufacture of the system [CW, Jan. 19].

The case was previously expected to reach the court this month.

Correction

Prime Computer, Inc.'s 400 system with 256K bytes of MOS main memory is priced at $71,200 [CW, Feb. 2].

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Information Industry Still in Infancy Despite 'Phenomenal Record': Diebold

NEW YORK – The information industry, despite its 'phenomenal' history, is still in its infancy, according to John Diebold, chairman of the Diebold Group.

Information technology "has chalked up a phenomenal record in the past 20 years and has made unprecedented strides in cost performance," Diebold said.

But "in spite of its importance, prevalence, controversy and explosive growth, most current uses of computer communications and related technology and knowhow are still only on the periphery," he said in a recent speech here at New York University's College of Business and Public Administration.

Diebold spoke on "The Evolving Role of Business Information" as part of the school's Key Issues Lecture Series. The series is devoted to a review of business and American economy since 1776 and the challenges that face business and economy in the years ahead.

As a business, information technology "has become America's third or fourth largest manufacturing and service industry, and it is probably the industry in which the U.S.' technological and applications lead over the rest of the world is greatest," he said.

Despite this "truly unique record, the field is in its infancy," he insisted. Current uses of computers relate to how a process is achieved, rather than to what is done, and involve applications or uses which directly involve only a small proportion of the population, he said.

In addition, industry products are primarily capital rather than consumer goods, and the major public policy issues revolving around information technology have just begun to be raised, he said.

Quarter-Century Prediction

The next quarter century will see an emphasis on what is done, applications that directly affect a large part of the population, consumer as well as capital goods and the raising of major public policy questions, Diebold predicted.

This potential universality of impact raises important questions for business and public policy, he said.

"One basic policy issue we must come to grips with is how we are to maintain the dynamic and entrepreneurial climate in America while we try to protect individuals and institutions from the possible dangers of an increasingly computerized environment," he said.

To achieve this potential with the fewest drawbacks, "the everyday citizen must become as familiar and comfortable with information technology products and services as he is with a TV set or typewriter," he said.

The need is thus "education at all levels, from as early an age as possible and on a continuing basis."

The first step in achieving this goal is to recognize "that the evolving role of business information involves breaking the conceptual boundaries" that separate it from "nonbusiness" information.

"The real and inevitable evolution of business information is as an integrated element in a community system," he concluded.

Senate Unit Approves Science Advisor

WASHINGTON, D.C. – Legislation to establish an Office of Presidential Science Advisor was approved last week by the Senate Commerce Committee.

A bill similar to it was recently approved by the House of Representatives.

Both bills are now in conference and a final bill, once drafted, will be sent to the House and Senate.

Action on the final bill is expected to come by the end of this month. If the bill is passed and signed by President Gerald Ford, the Office of Presidential Science Advisor could be instituted by March or April, sources said.

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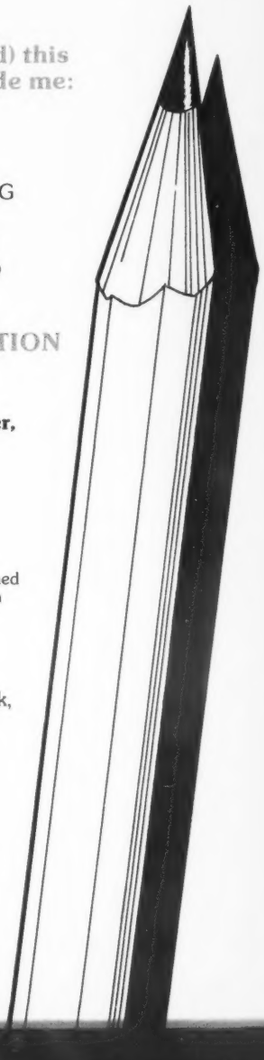

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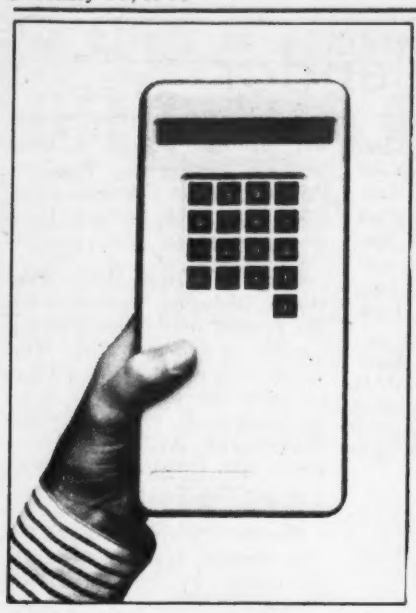

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70% of Info/Expo 75 Attendees In DP Management, Survey Finds

By Catherine Arnst
Of the CW Staff

ATLANTA – About 70% of those who attended the Data Processing Management Association's (DPMA) annual conference here last June were involved in DP management, according to a survey of attendees done by the society.

The results were based on a total of 712 responses to a survey mailed to 1,652 individuals who attended Info/Expo 75, excluding exposition personnel.

The heaviest concentration of companies represented were large, with 68% having more than 250 employees and 48.8% having a sales volume of over $50 million.

Over 88% of the attendees' applications were of a business nature and 38.3% were involved with time-sharing applications. Other applications included manufacturing and process control (36.5%), data conversion (23.7%) and scientific and military (27.8%).

The survey also found medium-scale systems were used by 48.7% of the attendees, large-scale systems by 34.7%, small-scale systems by 25.3%, minicomputers by 24.1% and microcomputers by 4.1%.

When asked what their companies plan to buy in the next 12 months, 8.5% and 8.4% said large-scale and medium-scale systems respectively, 11.9% plan on getting minicomputers, 3.8% will buy small-scale systems and 4.9% microcomputer systems.

IBM was the dominant vendor of the mainframes used by conference attendees, the survey showed. Almost 16% used 360s, 47.3% used 370s and 11% use other IBM systems.

The vendor used most after IBM was Honeywell, with 7.1% of the attendees.

Discrepancy in Exhibits

There was a discrepancy, however, between the type of system attendees used and the type they would like to see exhibited, the survey found.

When asked what other vendors attendees would like to see more of at future shows, 25.7% said Univac, which is used by only 5.4%; 15.8% chose Control Data Corp., used by 2.1%; 14.9% said Honeywell; 10% chose Burroughs, used by 4.7%; 13.9% want Digital Equipment Corp., and 10% want Hewlett-Packard.

Both DEC and Hewlett-Packard did not make the list of the top nine mainframes currently used by attendees, the DPMA noted.

Although IBM did not receive any requests for more exposure at future shows, that company's exhibit at the last show drew far more attention than any other, according to the survey.

About 350 survey respondents mentioned IBM's exhibit, where the 3760 dual key entry station was demonstrated, as the one that attracted the most attention. The closest vendor exhibit after IBM was Sycor, with 89 mentions.

IBM's exhibit was rated the most impressive presentation by 48.1%; Sycor, again the next highest, received a 6.8% response on the same question.

Look for Products

When at an exhibit, 84.6% of the respondents claimed, they are particularly looking for new product information and 67% for product demonstrations.

Technical data on products or services seemed to be the least desirable; 35.4% mentioned this as what they normally look for at an exhibit, the survey said.

New products and ideas consistently came out on top as the reason for attendance at Info/Expo. Almost 87% of the survey respondents said last year's show was useful mainly because of the information they received on new products.

Of the products attendees would like to see exhibited in the future, 43.3% said computer systems, with 14.2% requesting mainframes and 12.8% requesting minicomputers.

In addition, 40.4% want to see peripheral equipment exhibited, 24.1% chose software, data communications equipment received 13.5% of the responses, DP services got 12.8%, 10.6% chose computer output microfilm and 5% want to see accessories and supplies.

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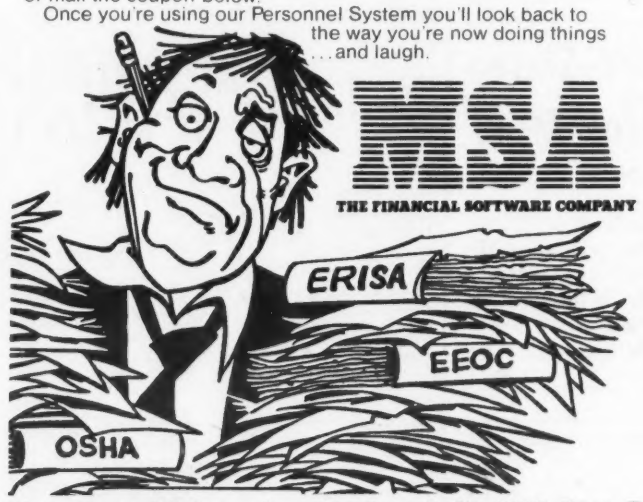

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Two Get Lanchester

DP-Based Fire Plan Brings Prize

LAS VEGAS – The design of a computer-based method to effect prompt redeployment of New York City's fire companies during emergency conditions has won honors for two Rand Corp. researchers/consultants.

The Lanchester Prize, involving an award of $2,000 and a commemorative medallion, was presented here recently to Dr. Peter J. Kolesar and Dr. Warren E. Walker for "the best English-language published contribution to operations research" in 1974 by the Operations Research Society of America (Orsa).

The prize-winning paper, "An Algorithm for the Dynamic Relocation of Fire Companies," was prepared in the course of studies for New York's fire department by the New York City-Rand Institute (NYC-RI). It was published both as an NYC-RI report and as an article in *Operations Research*, the journal of Orsa.

"This work has been of great importance to the fire department and to the city. The results have helped the fire department to maintain the highest standards of fire protection in the face of the city's current budgetary problems," John T. O'Hagan, New York City fire commissioner said in a speech congratulating the winners.

The system Kolesar and Walker designed provides for computerized response in emergency situations, relocating some fire companies to provide the greatest amount of protection as other companies go into action.

It was successfully tested by the New York Fire Department, which is moving toward implementation by constructing a management information and control system, according to a Rand Corp. spokesman.

The system will initially be operational in the borough of Brooklyn in about a year.

Kolesar is a professor of computer science at City College of New York, and Walker is an assistant vice-president of the Chemical Bank of New York.

Societies/ User Groups

Univac Users Form One Group

PITTSBURGH – Two Univac user organizations have merged to form the American Univac Users Association (AUUA), which will include users of all products in the Univac line.

The AUUA is the successor of the Univac Users Association, formed in 1955, and the Series 70 Computer Users Association, organized in 1959.

Further information on the society is available from Mary O. Jones, U.S. Civil Service Commission, Bureau of Manpower Information Systems, 1717 H St. N.W., Washington, D.C. 20415.

Isaacson Named to Chair NCC in Dallas in 1977

MONTVALE, N.J. – The 1977 National Computer Conference (NCC) will be chaired by Dr. Portia Isaacson, Assistant Professor of Mathematical Sciences at the University of Texas at Dallas.

NCC '77 will be held June 13-16 in Dallas, the first time it has taken place in the Southwest, and Issacson's appointment represents the first time a woman was chosen to chair the convention.

She is currently involved in a new computer science program at the undergraduate and graduate degree levels. Previously, she taught both hardware and software courses at North Texas State University and Southern Methodist University.

For further information concerning NCC '77, contact the American Federation of Information Processing Societies, 210 Summit Ave., Montvale, N.J. 07645.

Dr. Portia Isaacson

Sammet Slated For Ala. Meet

BIRMINGHAM, Ala. – A program highlighted by Jean Sammet, president of the Association for Computing Machinery (ACM), as keynote speaker will be presented at the 14th Southeast Regional ACM Conference on April 22-24.

Other speakers will include Dr. H.R.J. Grosch, contributing editor of *Computerworld*; Octo Barnett of Massachusetts General Hospital's Medical Information Systems; Donald Bitzer, known for his work in computer-aided education; Richard Eckhouse of Digital Equipment Corp.; James P. Fry of the University of Michigan; and Harry Katzan Jr. of Pratt Institute.

There will also be a special information-processing display provided by the Smithsonian Institute.

Further information on the conference is available from Emory C. Hubbard, University of Alabama at Birmingham, Division of Special Studies, University Station, Birmingham, Ala. 35294.

Calendar

March 1-2, Salt Lake City, Utah – **National Association for State Information Systems Western Regional Meeting**. Contact James W. Dixon, Systems Specialist, Systems Planning and Computing, 220 S. Second East, Suite 430, Salt Lake City, Utah 84111.

March 7-10, Chicago – **Bank Administration Institute (BAI) Exception Item Conference**. Contact BAI, P.O. Box 500, 303 S. Northwest Highway, Park Ridge, Ill. 60068.

March 12, Culver City, Calif. – **24th Annual Digital Computer Association Meeting**. Contact Irwin Greenwald, El Segundo, Calif.

March 17-19, Tampa, Fla. – **Ninth Annual Simulation Symposium**, sponsored by the Society for Computer Simulation (SCS). Contact SCS, P.O. Box 2228, La Jolla, Calif. 92038.

March 19-20, Hanover, N.H. – **Training Conference in the Administrative Use of the Computer in Education**, for women administrators in New England colleges and universities. Contact Women Administrator's Conference, Women's Program Office, Hinman Box 6002, Dartmouth College, Hanover, N.H. 03755.

March 18, Norfolk, Va. – **Executive Dialogue**, sponsored by the Federal ADP Council of the Greater Tidewater Area. The theme will be "Improved Management Through ADP." Contact Pauline T. Photinos, President, Federal ADP Council, c/o DMIS SM Division, Bldg. 5A, Fort Monroe, Va. 23651.

March 24, Hartford, Conn. – **6th Annual Systems Seminar**, sponsored by the Hartford/ Springfield Chapter of the Association for Systems Management. Contact Christie Walsh, Computer Assistance, Inc., 200 Park Road, West Hartford, Conn.

March 22-23, Washington, D.C. – **Software Management – DOD Systems**, sponsored by the IEEE Computer Society. Contact H.A. Richardson, 901 Wigwam Ave., Arcadia, Calif. 91006.

NRMA Hires Regulatory Advisors

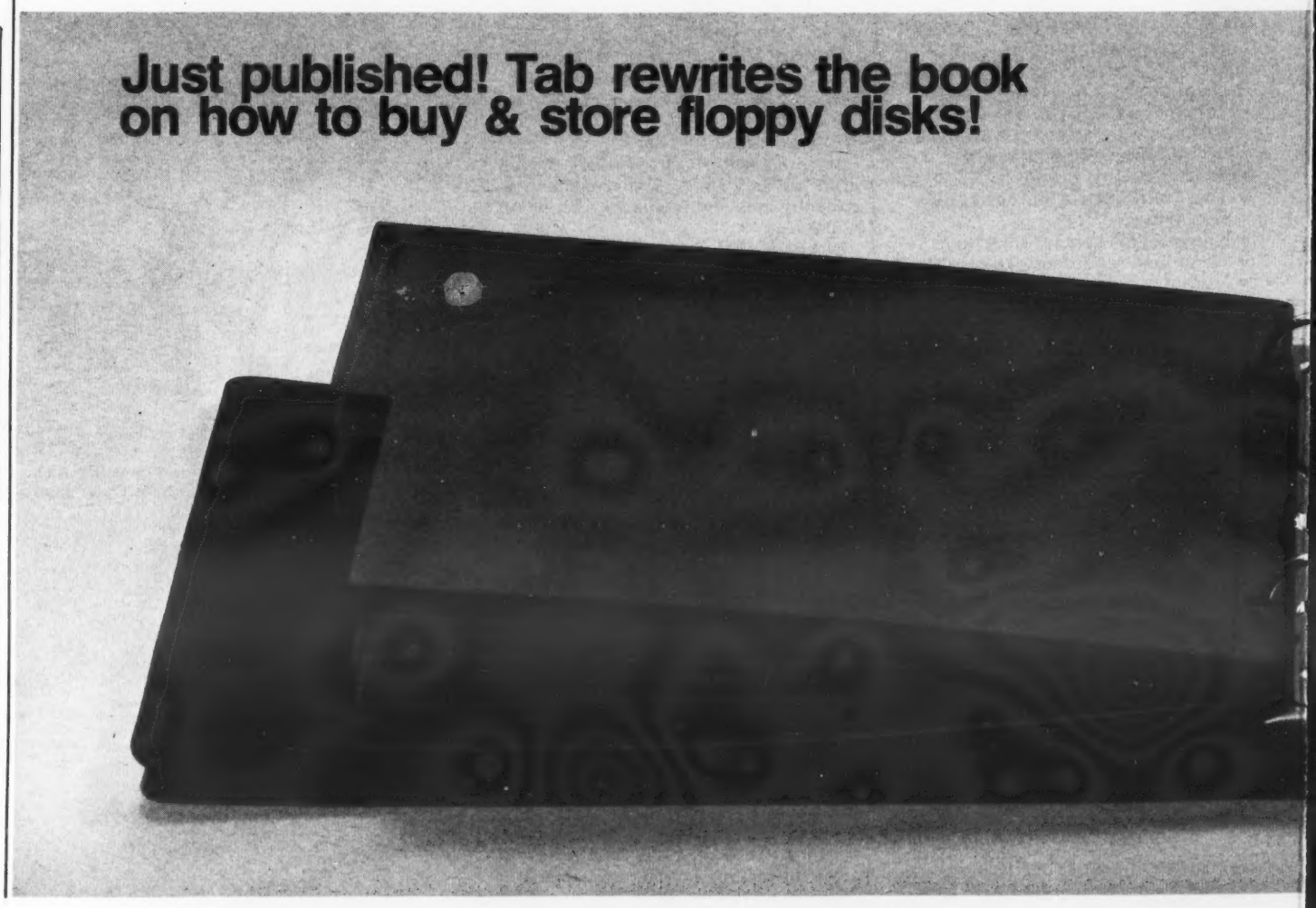
BOSTON – The National Retail Merchants Association (NRMA) has retained Economics and Technology, Inc. (ETI), a firm of regulatory economists, to expand its program on interstate communications, services and rates.

Dr. Lee Selwyn, president of ETI, was named special advisor to the trade association's Telecommunications Executive Committee.

ETI's role in NRMA is necessary because telecommunications is playing an increasingly vital role in the operation of the modern retail store, the association said.

"The growing complexity of the telecommunications industry also requires that retailers expand their activities in the regulatory area," an NRMA spokesman said.

The telecommunications program at NRMA will be aimed at keeping costs and services down and at presenting the retail industry's viewpoint to legislators and regulators, the association said.



In Effort to Balance Budget

IEEE Tightens Belt, Reduces Staff 8%

NEW YORK – The economic belt that has been tightened by many Americans is being pulled a few notches by the Institute of Electrical and Electronic Engineers (IEEE) in an effort to strengthen its financial position.

A reorganization of the institute has reduced the personnel of its headquarters staff by 8%, or 25 executive and supporting staff members out of a total work force of 288.

"In a year in which we have raised dues, we cannot possibly operate without a balanced budget. Therefore, this move was inevitable," Joseph K. Dillard, IEEE president, said.

The IEEE Executive Committee specified that "every effort must be made to provide those employees leaving our service with all possible financial and personal aid so that the transition to other jobs can be as painless as possible," a society spokesman said.

A professional out-placement specialist firm has been retained by IEEE to assist employees in finding other jobs, and other professional societies are being canvassed to seek suitable positions for those leaving IEEE.

Societies/ User Groups

SMIS Forms Special Group For MIS Development

NEW YORK – The Society for Management Information Systems (SMIS) has formed a special interest group for research and development in the field of management information sciences known as the Academic Special Interest Group.

The group stated its purpose as "promoting the interchange of ideas, needs and interests pertaining to the use of development of information systems in business, government and institutions.

"This interchange will focus on what the university campus can and/or should be involved in for the advancement of management information systems in international and domestic enterprises."

All persons in business, government and education and research institutions who are members of SMIS are eligible to join the group.

For further information, contact Professor James A. Senn, School of Management, State University of New York, Binghamton, N.Y. 13901.

Sigcaph Seeks Members

NEW YORK – The Special Interest Group on Computers and the Physically Handicapped (Sigcaph) of the Association for Computing Machinery (ACM) is requesting membership and correspondence from those in the computing community who are handicapped, employ the handicapped or are interested in the applications of computers in this area.

"Proper communication between the sectors that develop and use computing machinery enhances the development of physical and, more importantly, human resources," Dr. Edouard Desautels, chairman of Sigcaph, said.

Information on new developments can be sent to him at the University of Wisconsin Computer Sciences Department, 1210 W. Dayton St., Madison, Wis. 53706.

Correspondence and articles for publication in the quarterly newsletter may be sent to Stuart Soffer at the Wisconsin Clinical Cancer Center, 307 N. Charter, Madison, Wis. 53706.

DCA Plans Annual March Meeting

CULVER CITY, Calif. – The Digital Computer Association (DCA) will hold its annual meeting and dinner on March 12 at the Americana Hotel here.

In addition, the group has decided to relax membership requirements, according to Irwin Greenwald, DCA chairman.

DPers interested in joining the group can contact Robert D. Stone, membership chairman, at Informatics, Inc., Mark IV Systems Co., P.O. Box 1452, Canoga Park, Calif. 91304.

Student Fair NCC Feature

MONTVALE, N.J. – Students will have their own forum for demonstrating their technical prowess at the 1976 National Computer Conference (NCC). The 1976 National Student Computer Fair will be held at the conference in New York City June 7-10.

Elementary, middle and high-school students are eligible to enter projects in the fair which should "concentrate on the social situations they know best," according to Dr. Sema Marks, chairman of the fair. "We'd like students to create new computer tools for home or school use, produce a work of computer art or design and implement a computer game," he said.

The categories have been broadened this year to include computer art and music, short stories, science fiction and poetry "to attract a new group of students to computing," Marks said. "Elementary students, for example, may submit drawings of a computer," he suggested.

The fair is sponsored by the American Federation of Information Processing Societies (Afips). The first prize is an Altair 880 computer kit and a two-year subscription to *Creative Computing*, and winning entries will be published in that magazine.

The deadline for submission of application forms is April 1. For additional information, contact Marks at 1976 NCC Student Computer Fair, City University of New York, 33 West 42nd St., New York, N.Y. 10036.

Call for Papers

FIRST SOUTHEAST ASIA REGIONAL COMPUTER CONFERENCE (SEARCC), September, Singapore.

Papers are solicited on all aspects of: problems in transferring computer technology to the countries of Southeast Asia, data bases for developing countries and data communications for development in Southeast Asia.

Authors are requested to send four copies of a one-page abstract to F.C. Kohli, chairman, SEARCC Organizing Committee, Tata Consultancy Services, Air-India Building, Nariman Point, Bombay-400 021, India.

ASSOCIATION FOR COMPUTING MACHINERY 1976 ANNUAL CONFERENCE, Oct. 20-22, Houston.

The technical program for ACM '76 will include sessions organized by the ACM Special Interest Groups and Committees and additional sessions will be provided for papers of general interest or those not related to any Special Interest Group.

Persons active in computer systems and applications are encouraged to submit papers, in quadruplicate, to Roger W. Elliott, technical program chairman, ACM '76, Department of Industrial Engineering, Texas A&M University, College Station, Texas 77843 no later than March 1.

THE THIRD INTERNATIONAL JOINT CONFERENCE ON PATTERN RECOGNITION, Nov. 8-11, 1976, Coronado, Calif.

Sponsored by the IEEE Computer Society, the meeting will involve research, methodology and applications and will include a one-day Symposium of Computer-Aided Diagnosis of Radiographs.

Program topics include theory, preprocessing and special techniques, applications and implementations and methodology. Papers should be submitted to Allen Klinger, associate professor at the University of California in Los Angeles, 3531-C Boelter Hall, Los Angeles, 90024 by March 1.

1976 MOUNTAIN REGION COMPUTING CONFERENCE, Sept. 18, Denver.

The theme for the conference will be "Computing Machines, Computer People and the Rest of the World." Any current area of interest is acceptable for a paper.

A 200- to 300-word abstract should be sent by March 15 to George Richmond, Program Chairman, 1976 ACM Mountain Region Computing Conference, c/o Computing Center, University of Colorado, 3645 Marine St., Boulder, Colo. 80309.

SPECIAL INTEREST GROUP ON COMPUTER PERSONNEL RESEARCH (Sigcpr) 14th ANNUAL CONFERENCE, July 29-30, Alexandria, Va.

Tutorial, scholarly or position papers are solicited on any aspect of the system analyst. Papers describing surveys, actual experiences or proven practical results will be given preference.

Abstracts of 250 words with a bibliography must be received by April 1. Send all material to Paul D. Oyer, Program Chairman, ACM-Sigcpr 14th Annual Conference, U.S. Bureau of the Census, Room 1065, FOB No. 3, Washington, D.C. 20233.

THIRD INTERNATIONAL JOINT CONFERENCE ON PATTERN RECOGNITION, Nov. 8-11, Coronado, Calif.

The conference program will involve research, methodology and applications and will include a one-day symposium on computer-aided diagnosis of radiographs.

Suggested topics include theory (statistical methods, structural and syntactic methods, clustering, learning algorithms and modeling); preprocessing and special techniques (image processing, line drawings, wave forms, pattern perception, analysis of three-dimensional scenes and reconstruction from projections); applications (character recognition, speech recognition, robot vision, biomedical, remote sensing and other scientific and industrial applications); implementations and methodology (digital techniques, optical techniques, interactive systems, data structures, data bases and test and evaluation).

Four copies of full-length papers should be sent by April 1 to Prof. Allen Klinger, 3531-C Boelter Hall, UCLA, Los Angeles, Calif. 90024.

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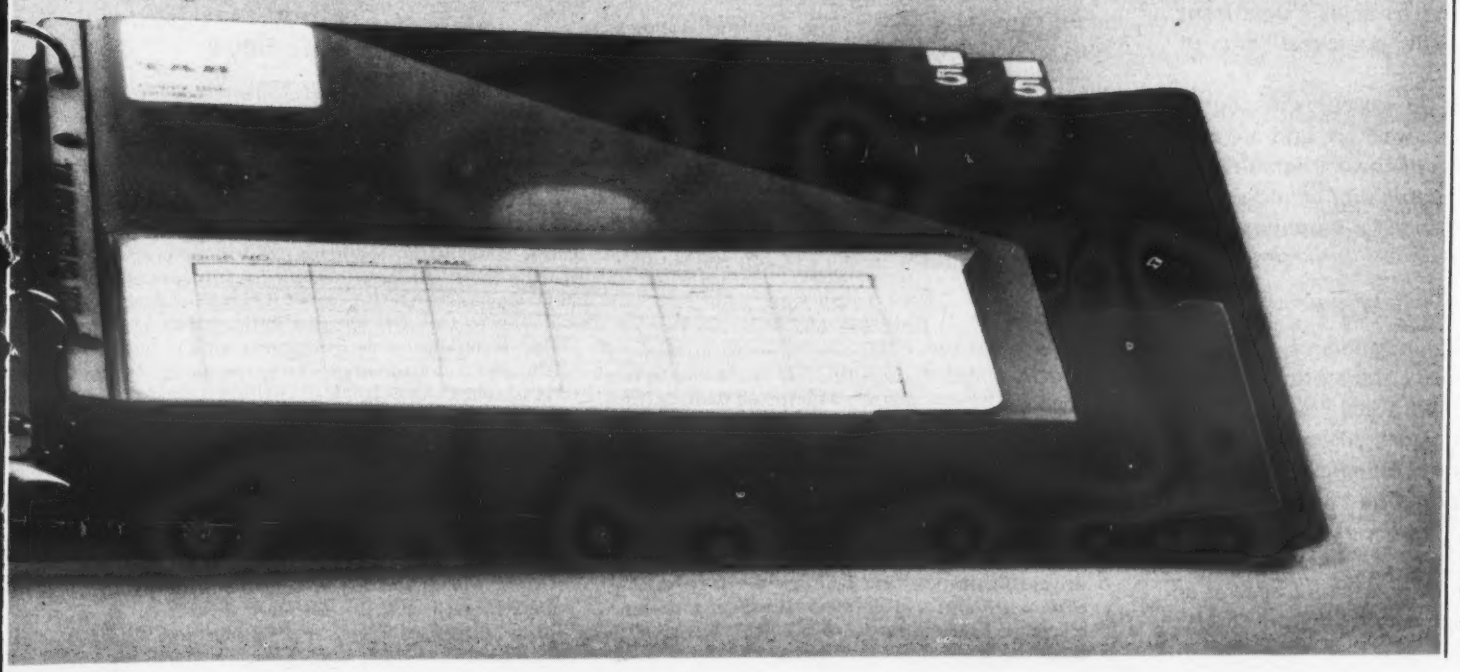

Editorials

Time to Face Facts

The issue that has attracted some very persistent advocates and many anguished adversaries had its day in court and the verdict is in: programmers are *not* professionals.

The decision was handed down by Federal Judge L. Clure Morton in favor of nine programmers who sued their employer for denying them overtime payments [CW, Feb. 9].

The company claimed these employees should be considered administrative, executive or professional personnel and thus exempt from overtime under the Fair Labor Standards Act of 1938.

"Significant independent discretion" marks the work of a professional under the labor act, and that is precisely what those programmers did not have, the court said.

Although this particular case affects only the nine programmers who brought the suit, the judge's decision generalized that the typical jobs performed by programmers – writing programs, debugging programs and flowcharting – do not qualify them as professionals.

It may be that personnel in some companies who are called programmers, but do far more than just those jobs, could be exempt from overtime rules. In such cases, however, the title of programmer probably shouldn't be applied.

But, it's not enough just to call a programmer by another name. Those nine were labeled everything but programmer by their employer, but the work they did was still that of a programmer, the judge ruled.

At Department of Labor hearings on the issue in 1971, the Association of Data Processing Service Organizations said "the crux of the problem is definitions." Its spokesman defined a programmer as "the captain of a ship . . . required to make instant decisions."

Judge Morton, however, found a programmer's position to be analogous to that of a draftsman working for an architect – he only carries out specifications prepared for him.

The court did not address the issue of licensing programmers as professionals – it only questioned whether they were professionals in the first place, which should remind those promoting licensing that the horse does indeed come before the cart.

Licensing (or certification) would not turn DP personnel into professionals. What it might do is standardize the level and quality of education needed to become a programmer, which might guarantee competency to some degree.

But licensing won't give programmers "significant independent discretion," and that is the real "crux of the problem."

It's time for the industry to accept the court's interpretation of what DP personnel are and are not.

Energy should now be directed toward establishing educational and industry standards that would ensure programmers are capable, which is far more necessary than being professional.

CW Digs for DP History

Computerworld is compiling a guide of museums and exhibits featuring equipment of historical interest to the computer community and needs your help.

If you know of any such sites, please mark the enclosed post-paid envelope with the words "DP Guide" and send enough information to enable CW to track them down and obtain details on when they are open.

CW plans to publish this guide in a future issue as an aid to those traveling about the U.S. during this bicentennial year.

Letters to the Editor

Lord's Exploitation of Tragedy Has Distasteful Implication

Kenniston W. Lord Jr.'s exploitation of the tragedy in Florida as a justification for licensing computer "professionals" [CW, Jan. 19] has a distasteful aspect to it. Is there an implication that if the data were correct such a homicide would be understandable?

If any lesson can be learned from the episode, it is that decent society is doomed if it allows undereducated law enforcement officers (packing guns) to spring into irreversible action based on trusting the readout from some computer.

Kenneth P. Seidel

Fallbrook, Calif.

UVM an Important Overall Issue

The issue of Jan. 19 once again showed that *Computerworld*'s editorial capabilities are going from bad to worse at break-neck speed.

Any paper which gives first-page coverage to an obscure and old legal tangle between a vendor and its former user and gives second-page coverage to the matter of the implementation of the Universal Vendor Marking (UVM) standard by the retail industry of America, has got to have come out of a yellow press school.

Doesn't CW recognize the scope and nature of the impact that issues such as the UVM have on the overall DP community?

Cesar O. Andrade

Kettering, Ohio

DP Must Serve Corporate Goals

George Glaser and Gopal K. Kapur performed a credible service for *Computerworld* readers in their Feb. 2 article, "Corporate Executives Should Be Involved in DP Goals."

However, the thought that remains in my mind is not whether DP is solving problems for management, but whether it is solving the right problems for management. The article suggests a larger issue, i.e., how do we make an efficient management tool more effective.

If the corporate purpose is known, understood and accepted by all, then the question of "what should we do?" becomes "do we do it?"

We ought to consciously budget resources to planning throughout the year and not merely at budget time. Our intermediate and long-range business plans should be more explicit in outlining the measurement and control of the objectives set forth in those plans.

Corporate planning should challenge DP to help fulfill corporate goals and not vice versa. Only then is it proper that "Corporate Executives Should Be Involved in DP Goals."

Leonard A. Weibel

Dayton, Ohio

An Alternative Technique

I would like to comment on William B. Simmons' article in the Jan. 26 issue of *Computerworld*. He indicated the clarity of a Cobol program could be improved by using nonunique paragraph names in small functional sections.

May I suggest that an easy-to-follow Cobol program may also be generated by prefixing all paragraph names with a sequence number. By properly spacing these numbers to allow for future possible insertions, any GOTO or PERFORM statement will refer to a relative location in the program.

This technique is easily learned and is just as applicable to "structured" programs as to "good old-fashioned" Cobol.

A further refinement of the above involves making the paragraph prefix correspond to the first three digits of the Cobol line number. A bit of discipline is necessary to do this, but its use will greatly decrease the amount of time necessary to become familiar with another person's program.

In an age of fast changing business requirements, programs which are easy to follow and modify are imperative to a successful DP operation.

Steven A. Epner

St. Louis, Mo.

Data Past

Eight Years Ago
Feb. 14, 1968

WASHINGTON, D.C. – The Johnson Administration backed down from explicitly outlawing the patenting of computer programs, as it had previously proposed.

– – –

WHITE PLAINS, N.Y. – A 320K-byte self-threading magnetic tape unit – said to be the fastest unit using standard computer tape – was announced by IBM Corp. The 2420 can be used on System 360 models 50, 65, 75 and 85. It costs $54,600 and uses a special $55,400 control unit.

Five Years Ago
Feb. 17, 1971

LOS ANGELES – An early-morning earthquake which rumbled through this city last week, leaving dead and injured people, widespread damage, fires and telephone failure, saw half of the DP centers back in operation by noon and nearly all operational by the next morning.

– – –

LOS ANGELES – University computing centers are approaching a crisis as supporting funds from the Federal government, state governments and private institutions are being severely reduced or eliminated entirely. Centers are facing not just severe cutbacks in facilities and programs, but the threat of losing their computers.

Huge But Harried

Like Gulliver beset by Lilliputians, the poor Social Security data processing people are all spread-eagled and tied down by a million threads and ten thousand tiny stakes. You may have seen the illustration I'm recalling; each hair of the monster's head was fastened to a microscopic tent peg, every ribbon and fringe and lace was used to pin him down.

Thing is, Gulliver should never have dozed off, soft though the greensward may have been. And so it is in Baltimore: our recent story [CW, Jan. 26] about the attack on the proposed new SSA data processing facility would never have been written if good management had functioned ten or even five years ago. The tremendous daily, monthly and quarterly loads have for decades stretched the punched card and the computer facilities of the Administration to the limit. On the one hand, much of the system "just grew," and was obviously messy, poorly partitioned, written in obsolete computerese, patched and stretched and interwoven; terrible, shuddersome. On the other hand, the press of ever-increasing data streams, along with occasional unpredictable changes in the law, the context (privacy and security, especially), and the economy, made it very difficult to plan ahead, to test out new ideas, to procure sample hardware and software. I wanted them to look at Unicon non-erasable laser storage back in 1970, as a possible replacement for their (then) 200,000 jam-packed tapes; GSA wanted to change their procurement methods; standards people wanted them to switch to ASCII code; language nuts wanted a whack at their retrieval methodology.

The poor devils (or the dumb bureaucrats, if one is working that side of the fence) just couldn't do it. They were trapped, like Gulliver. They had to put every operator, every manager, every piece of hardware to work every minute of every day just to keep up with the waves, the torrents, the oceans of data flooding in one them. Or so they said! They put on patches with reasonable alacrity, I noticed; they installed a computer and a special staff, and a paperwork system to interact with same, just to keep track of the physical whereabouts and DP status of those 200,000 tape reels. And which of 500 drives each reel was to be/was/had been/should not have been mounted on. From which cart, pushed by whom, into and out of which machine room; wow!

Salesmen, consultants, inventors, government auditors streamed through the acres of equipment and offices, and the tens of acres of files and vaults, and were hardly noticed. Clearly, a group needed to be split off, and charged with long-term thinking: new systems, new coding, new standards, new conventional hardware, and above all, radical new possibilities. The military did it, and the National Security Agency people at Fort Meade did it; there were even larger files in several such areas – giant inventories, weather data, space stuff, raw and processed cryptomaterial. But there were several differences: little old ladies in tennis shoes didn't write to their congressman if a punched card gave the noon temperature in Baton Rouge on January 16, 1973 incorrectly. There was no tradition of "get ready, the Russians are coming!", and there was in fact a fair record of economy and close administration from the early years. Perhaps worst of all, there was no history of, or pride in, technological innovation. Even Census and the Patent Office had that, or some of that; not Social Security.

So hair by hair, fringe by fringe, thread by thread dumb, sleepy Gulliver was tethered. Then the trumpets blew: IBM had a warehouse full of old 370s to unload; some Nixon-era contractors needed a building to core on, having practiced for years at the FBI monstrosity; the chip merchants were threatening on-line RAMs and ROMs at nothing per megabit. And the roof fell in: whistleblowers everywhere; the GAO crawling around under the desks; physical deterioration of buildings, computers, and operators.

Of course it isn't too late. Unlike Beirut, Baltimore is not yet an utter shambles. The temporary buildings, the standby equipment should go ahead. The delays which Congress should, and probably will, impose will let SSA get a look at the IBM neo-FS picture if it comes this spring: the very idea of *buying* an acre of 1964 architecture in early 1976 is hilarious.

How about taking over one of the larger unfundable aerospace computer shops? There are several in the East, and in fact a couple near SSA: Westinghouse at Friendship, and APL still designing V-1s down toward Washington. Use it, not for production (or at least, only for *parallel* production as a part of large-scale experiments), but to write new software, test new hardware, and try new storage devices. Then, when the (1978?) improved system is ready, a new building and new equipment, post-370 and post-core and probably post-tape, can run in full parallel for several weeks and cut in. Personnel would clearly be the really tough problem; weekend and off-shift training works well for dedicated types and managers, but there are many hundreds of extremely nondedicated GS-4s who have to cope. A summer switchover, with several hundred local college kids as a temporary work force, would be my suggestion.

And even more important – *don't* shut down the experimental facility; start on the next "generation" right away – as Omar put it, "Striking from the Calendar . . . dead Yesterday."

Herb Grosch

Start-Soft Procedure Now as Necessary as Fail-Soft

The Taylor Report
By
Alan Taylor, CDP

A computerized phone service ran into a minor, temporary problem early this year. Following designed problem techniques, the system took itself off the air, reinitialized and started up again – all within a few seconds. During the interim the service for a number of areas was cut off and then restored. All well and good – so far.

But then everyone who had been cut off tried to redial. Immediately! and that was a new problem altogether.

The computer system, back on the air, was ready for normal operation again, but nothing in the design specs of the general system had ever taken into account the peak load of dialing that might occur after a momentary disconnect and reconnect. So the whole system went down. And stayed down for hours, not part of a second.

All of which suggested there is something lacking in our understanding of how to put computerized systems back on the air after some interference. Going back on the air isn't necessarily just putting everyone back into a "normal" position. It actually involves an imaginative treatment of worst-case possibilities that have to be newly defined in the light of the computerized system – not in terms of previous, noncomputerized systems.

The best-known noncomputer parallel is probably the case of the Northeast Blackout, which occurred just over 10 years ago. This resulted from fail-safe procedures that protected irreplaceable equipment from handling impossible loads.

As more and more of the generators on the grid went down, the restart problem cascaded. Eventually, restart was centered around Cambridge, Mass., and Montauk, Long Island.

In Cambridge, some MIT students (using wet batteries from their labs) jury-rigged power into the control room of their local stations - and this was slowly built on, with sectors of demand added only when the waiting, already working generators were ready to take the abnormal loads each sector generated during the first few hours.

Similarly, the Long Island station, after developing its maximum power, let in carefully selected other parts of the grid. These in turn isolated themselves from impractical demands by controlling, almost street by street, the resumption of power service. Hours and even days went by before matters were brought back to normal.

While this precomputerized restart was going on, the electrical supply people had their mathematicians at work alongside them, watching the actual power demand curves when various sectors were brought up. Most heavy-duty equipment had been turned off after the blackout started. Only a few lights were left on, ready to signal the resumption of power.

Appeals were made for people not to immediately restart all their appliances and for industry not to go right into full-blast production. The pattern of one sector was physically watched in order to forecast the next sector's demands.

But computerized systems of the 1970s simply don't have the luxury of waiting until disaster to plan recovery. We hardly have seconds – and certainly not hours. At least not unless we plan ahead.

Computers can, and do, go down for such short periods that abnormal loads can be created by simply coming back on the air as soon as possible. And systems that control anything beyond a set of terminals can induce *noncomputerized* overloads simply by timing a series of actions unexpectedly close together. The result can be a widespread breakdown of the outside system.

Inspecting the Problem

This startup problem is not something systems designers can reasonably wait and expect others to tell us about. True, the problems will occur in the noncomputer parts of the system for the most part – but the initiation of the problems will occur as a result of the computers coming back on the air, either from a complete or a partial breakdown.

The resultant problems are not commonly understood, and it is our job as computer experts to bring the problem out for inspection.

What is needed is a start-soft procedure as well as the now-standard fail-soft actions that precede computer breakdowns. Indeed, the value of fail-soft can be totally lost without start-softs.

A further part of the start-soft design consideration is in considering how to account for the time that, while the computers are ready to roll, the whole system is not, i.e., the start-stop line. Is this to be regarded as computer downtime? Or system downtime? Or what?

In more and more procurements this question can be crucial because of specified uptime percentages that have to be met. Unless the need for the start-soft procedure is understood, there is a distinct possibility the percentages can be skimped to safeguard clean contract requirements.

As I see it, the start-soft time is a basic characteristic of the controlled system – whether it is measured in seconds or hours. The people who want to have such a computer-controlled system should know what their particular start-soft period is.

If they don't, then it is the duty of the computer designers to educate them about the concept and evaluate what their particular start-soft factors are.

In some cases this may be so long that it becomes economic to have computers standing by at all times. Even so, two simultaneous computer failures have been known to occur, so start-soft considerations still apply in such cases.

When this has been done, the system specifications for percentage uptime should be defined as something completely independent of downtime frequency – just as mean time between failures and mean time to repair are independent specifications.

When this is understood, then the specification problem implicit in the definition of how to measure start-soft time will vanish.

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Software Protection an Example

DPers Must Act as Community to Get Relevant Laws

By Sander Rubin
Special to Computerworld

To leap into the center of two other guys' argument is to invite a bloodying by both sides, but the debate between Roy N. Freed and Gerald H. Larsen is too good to ignore. It seems both Freed and Larsen are right, but are talking past each other, not to one another.

First, let's review the previous discussion. Freed pointed out [CW, Oct. 15] that a "software program" may be defined in different ways in legal documents – as a piece of property, for example, or as the rendering of a service or as a process. Depending upon the definition used, the legal consequences may vary drastically and with severe impact.

Larsen retorted [CW, Nov. 19] with a nice piece of Swiftian satire, an allegory of a transaction between a young and beautiful but infected lady and a certain John. The satire and accompanying comment worked on more than one level.

First, they were an appeal for attention to the substance of transactions rather than the forms of words used to describe them. Second, they were, at least implicitly, an expression of profound disaffection with the legal profession's approach to the problems of the DP industry.

Freed replied [CW, Dec. 17] form and substance can not be separated in real-life situations. We live in a society ruled by law, and inattention to legal categories is likely to result in substantial adverse consequences.

He warned that people who act as their own lawyers do so at their peril. And, on his own terms, Freed was absolutely right. Doing business today does require careful weighing of the legal implications of one's acts and utterances; the constant guidance of a legal professional is a virtual necessity to steer a course through a minefield of law. Business reality is not divorced from conformity to proper legal form.

Freed's attention to alternative legal implications of the words used in a contract was thoroughly lawyerly, and I would certainly want someone like Freed on my side if I wanted to reach an agreement.

Unanswered Questions

On the other hand, Freed's reply elided certain questions clearly implicit in Larsen's comment:

- Why does a lawyer have to adopt a nonidiomatic expression (such as "software program") when describing an artifact of another's craft?
- Why does a lawyer's coinage of words carry decisive weight while others are classified as jargon?
- Why does the artificial reality of the law (for example, the tax laws) create outcomes that are determined by a clever selection of words rather than by the underlying substance the words are intended to describe?
- Why, after at least a quarter century of existence of the art, is the patenting of computer programs (or an alternative form of protection) still a subject of legal debate with no clear indication to the concerned practitioner of how he may secure the benefits of his work?

That lawyers have too often been unresponsive to questions such as these does them little credit, but before assigning blame it would be well to cast a wider glance. All of us have similar kinds of questions to answer and responsibilities to answer for.

Generic Problems

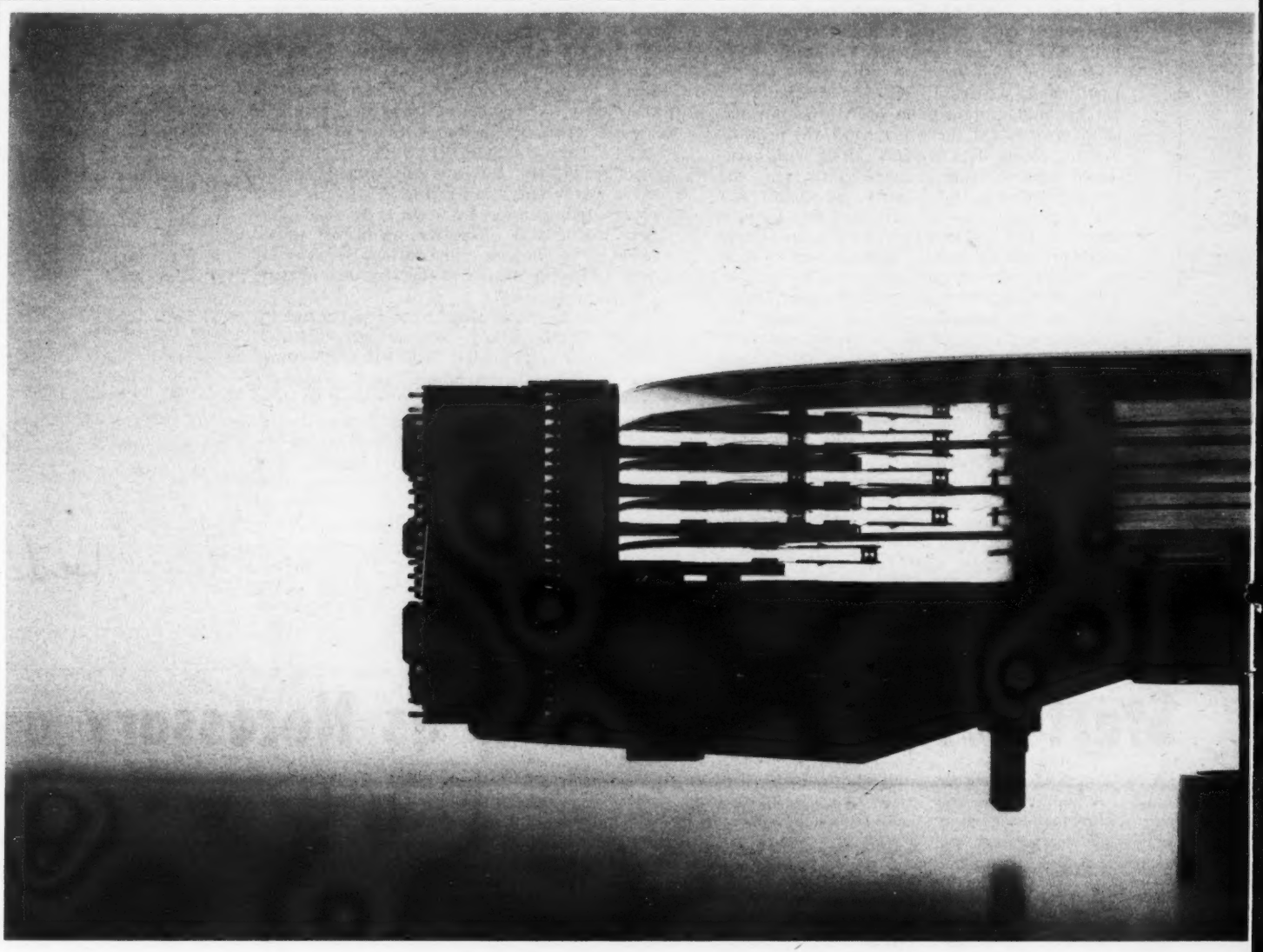
It is often useful to find a scapegoat for the failure of overrun of a project, but in truth such events are usually the fault of several parties. The practitioner should serve his client well, but the client also has an obligation to know what he really wants and to describe it unambiguously to the practitioner. There are apt parallels between the relationships of lawyer-to-client and programmer-to-client.

The problems that arise in such relationships are generic and not peculiar to one or another profession. By swapping roles, it is easy to arrive at sound guidelines for being a good client and protecting yourself:

1. Do not abdicate your responsibility for defining your own interests and articulating those interests clearly.

(Continued on Page 15)

Reader Commentary



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Common Terms Necessary for Legal-Technical Dialogue

Reader Commentary

By William H. Lumpkin Jr.
Special to Computerworld

Buried in Roy N. Freed's reader commentary, "Where Law Affects DP, Form Does Equal Substance" [CW, Dec. 17], was the often-heard admonition to the lawyer and computer specialist that each should develop a more sophisticated understanding of the fundamental conceptual categories and constructs of the other's discipline.

For the computer professional, perhaps this means acquiring a broad understanding of major problem areas in both contracts and administrative law. Or perhaps it means taking refresher courses in business or business law.

For the lawyer it might well mean coming to grips with the profound economic and organizational impact of the computer in the modern corporate structure. While the corporate sphere of impact does not overshadow larger social issues such as privacy, public access or pervasive government systems, it does offer a familiar backdrop for the formulation of major issues and for problem analysis without plunging directly and immediately into the depths of political philosophy.

No Mean Task

Such broadening educative undertakings are not only needed to solve the problems faced today in both professions, but also to develop a basis for intelligent dialogue. At the most rudimentary level, such a dialogue might well generate an effort to standardize the technical terminology which has heretofore been haphazardly transplanted from the erudite jargon of "computerese" to the learned tongue of "legalese" – often with confusing results.

Needless to say, this is no mean task, especially since we know that any 50 computer people will define any given term in no fewer than 49 ways and that lawyers have a similar propensity toward consensus on definitions.

As the related computer professions emerge from the formative cocoon of supplier dominance, we can expect the language of computing to acquire new form as well as substance.

And, as this language evolves, we can expect related mutations to occur in legal concepts and expression. Actually, it could hardly be otherwise as this powerful technology is continually injected into our major institutions.

It seems quite evident that symbols of common significance must be developed if we are to sustain the kind of beneficial dialogue which will be needed to solve the imminent problems, as well as to prepare for problems not yet in the pipeline. This is precisely the metaissue that Freed raised and that deserves considerable thought from us all.

Lumplin, formerly involved in computer-related activities, is now a law student at the University of Georgia.

DPers Must Act As Community

(Continued from Page 14)

2. In matters relating to your own area of competence, insist (as Larsen did) that your lawyer use your terminology. Though it appears to be a matter of mere form, the imposition of an alien terminology is the first step to alien control.

3. If your lawyer can not explain the rationale of his recommendations in a way that makes sense to you, find one who can.

4. The world of law (as Freed pointed out) is an artificial one. Do not, therefore substitute your own uninformed idea of what makes good sense for a studied decision based upon the advice of an experienced lawyer.

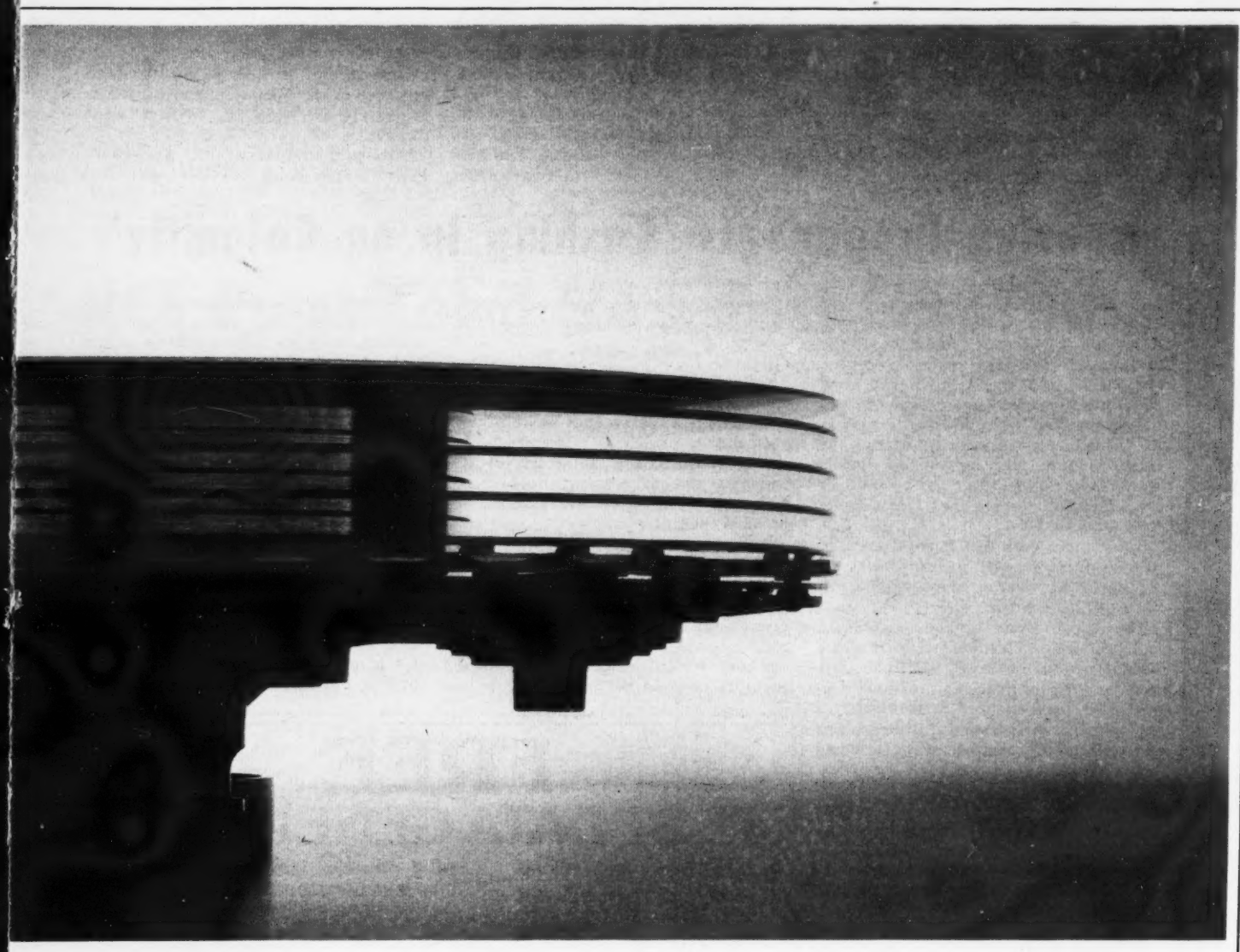
What of the perceived gap between form and substance? How can we solve, for example, the vexing question of legal protection for software?

Answers are largely out of the hands of individuals. As long as the law is shaped by decisions in isolated cases, it will reflect the idiosyncrasies of those cases and the special interests of those who are willing to litigate.

For the law to be in tune with the common understanding of reality, the community must reach a consensus and demand of its lawmakers that its laws reflect that consensus. The role of the individual here is to engage in the debate toward that consensus and to support spokespersons who accurately represent his point of view.

Unfortunately, long-term community business seems to be no one's business, and we all are caught up in maximizing the bottom-line figure for our own enterprise for the current year. Recognition of that tragedy is only the first step to a cure.

Rubin is proprietor of Wordsworth Systems in Redondo Beach, Calif.



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Wanted: White Knight to Stop Untenable DP Legislation

By Kenniston W. Lord Jr.
Special to Computerworld

Two hundred years ago, Thomas Paine rallied the conscience of the colonies with his publication, *Common Sense*. It is perhaps time for someone within our industry to undertake a similar effort on behalf of the public we purport to serve, for what is emerging in our industry is a situation not unlike that described by Pogo some years ago when he said, "I have seen the enemy and he is us."

Computerworld has now chronicled two separate, but nearly identical, incidents from the State of Flordia. In the first incident, an innocent man was killed [CW, Dec. 10]; in the second, a woman and her companions were scared out of their wits [CW, Jan. 19].

Those who think must ask ourselves whether a recurrence of the first incident might be possible.

CW has also chronicled the suspicious demise of the Michigan service bureau which left nearly 600 small companies holding the bag when its president left town, allegedly with those companies' funds [CW, Jan. 26].

But CW has *not* chronicled the incident of the woman thrown into jail in Maryland when she was unable to produce her driver's license and when the Delaware computer which was queried failed to respond with confirmation of the issuance of the license (it was down at the time).

Not to fault CW, as it is probably not privy to Associated Press and United Press International sources, but it's becoming patently obvious that the number of pieces appearing in the public media which detail the abuses and mishandling of the public welfare at the hands of computers and computer people is expanding geometrically.

At the moment, it is a selection of random stories, random incidents, diversely scattered. But a fabric of computer-related *people abuse* is emerging, and sooner or later there will be enough documentation in the laps of our legislators to add some impetus to the concerns.

Reader Commentary

What looms before us is the specter of public hearings, at which time people are going to crawl out of the woodwork at an unprecedented rate to bring such frustrations and abuses to the attention of these legislators. What will emerge will be legislation so oppressive as to make the privacy hassle look like a Sunday School picnic.

Now is the time to do something about it, and I think that we, members of the information-processing industry, had better be the ones to do it. This, therefore, is a call for support and assistance.

Are you, the information-processing practitioner, prepared to take a leadership role in getting the situation corrected? It will not be an easy job. It's going to take money. It will require work. It will require the devotion of time.

But it *has* to be done. And our industry is so devoid of central leadership that nothing is about to happen by itself.

This industry needs an ombudsman, an advocate, a "white knight," a Ralph Nader – and it doesn't look like one is about to emerge. I don't think I could adequately fill that role, but I'll just bet that somewhere out there there are enough of you who, like I, lose sleep over these issues and know we can collectively begin this very necessary work.

Are you one of those people? Write to me, care of the Society of Certified Data Processors, 38 Main St., Hudson, Mass. 01749.

Lord is president of the Society of Certified Data Processors.

Licensing Proponents 'Cashing In on Calamity'

By Robert R. Hamilton
Special to Computerworld

In the Jan. 19 issue of *Computerworld*, Kenniston W. Lord Jr., president of the Society of Certified Data Processors (SCDP), was still singing his Lorelei song about licensing.

That time, however, he tried to cash in on calamity by illogically connecting the tragic shooting accident by the Florida state trooper [CW, Dec. 10] to the silly idea that the licensing of DPers could have prevented it.

Not content with this demonstration of myopic reasoning, he blatantly threatened us with a prediction that it will recur if we aren't all licensed.

The syllogism was stretched beyond the point of anyone's intelligence. It was a very dangerous emotional bait to be snapped up by unsuspecting, unknowledgeable and inexperienced state legislators and used as a sensational issue to ram through the licensing scheme of Lord and the SCDP.

Data processors, for your own protection of your rights of freedom to gain your livelihood and your ambitions without interference and harassment from unqualified government agencies, you must vigorously oppose the licensing scheme.

Do so by writing to your legislators; do so through your DP associations; do so by informing your employers of its dangers to their companies. You cannot be complacent!

But don't take my opinions, solely. Obtain a copy of Massachusetts House Bill 4964 from the Government Regulation Committee, Boston, Mass.

This has been advocated by Lord and the SCDP to *all states* as the model DP licensing bill. Read it for yourselves. The language is clear; the intent is obvious: It was designed to give a few chosen individuals vast personal powers to arbitrarily control you and your companies.

Restricts Job Choice

For individuals, job choice would be restricted, acceptability as a DPer would be determined by law (not by ability). If you didn't qualify for licensing, you would automatically be a second-class employee and advancement could be controlled by capricious and autonomous political appointees.

For companies, politics would penetrate their administrative and personnel perogatives, employees would be separated into classes, nonqualified individuals would be encouraged to form unions to gain recognition, barriers between DPers and management would be erected and upward mobility of good DP managers would be stifled.

The state DP licensing agency, according to this model bill, would be an autonomous body not accountable to anyone and could set its own rules and practices and penalties to be applied.

It would also be vulnerable to political patronage – and at a cost which DPers would have to pay through licensing fees.

A licensed DPer would have the power, supported by law and the fear of very severe penalties, to turn on and off his company's DP operations by giving or withholding his approval of programs and systems.

Those of us who think must ask ourselves must challenge Ken Lord, the SCDP and all other advocates of licensing to defeat this insidious scheme. Once a licensing bill is passed, it will be too late to lament, "I wish I had."

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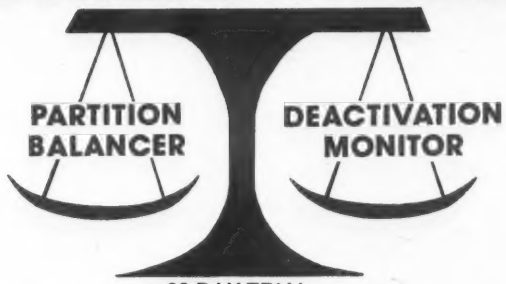

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FTC Implementing DBMS as Citizen Complaint Monitor

By Catherine Arnst
Of the CW Staff

WASHINGTON, D.C. – The Federal Trade Commission (FTC) is installing a data base management system (DBMS) which it hopes will eventually handle complaints and other correspondence received, all cases being investigated, personnel systems, financial managment and library control.

The system chosen to handle these files was Infodata Systems, Inc.'s Inquire. Marketed for six years as an information retrieval and reporting system, Inquire has recently been enhanced with facilities that make it a DBMS, Infodata said.

The FTC is now in the process of converting from a multisite, multivendor environment to a single outside time-sharing service provided by Optimum Systems, Inc. (OSI). OSI will run the agency's applications on an IBM 370/158 in an OS environment.

FTC needed a DBMS compatible with OSI's hardware and wanted an "integrated on-line or batch multifile system," according to Larry Stevens, assistant to the FTC's assistant executive director.

"What we wanted basically was a management tool," Stevens said. The first application being converted to Inquire, he said, is the Case Project Tracking System (CPTS), which will track the progress of all cases under investigation by the agency, from the preliminary investigations through to litigation, if a case ends up in court.

Included in the CPTS will be the data from weekly activity reports filled out by each attorney working for the agency. The reports will resemble a time card and include what is being worked on and the amount of time spent by each attorney.

This data will be summarized at the case level and also be linked to the personnel system. Thus, the amount of effort expanded on a case can be determined by matching the attorney's salary with the hours spent on a case.

CPTS will operate in both batch and on-line mode, with access to the system available through CRT dial-up terminals that are teletypewriter-compatible, Stevens said.

The DBMS needed by FTC had to have a multifile capacity and interactive on-line query capabilities. It had to be as English-like as possible to be accessible to the attorneys in the agency and have a lot of sophistication in report generation, Stevens said.

Chosen for User Advantages

Most DBMS packages were considered, Stevens said, and Inquire was chosen because "it has some distinct advantages in user features" over the others, "especially in its multifile capabilities.

"I have a very broad or demanding interpretation of what a DBMS system should do," Stevens said, claiming Inquire was the only system that met all his specifications.

"Our criteria was mainly user efficiency and Inquire offers relative processing ease," he said.

Inquire had an added advantage, Stevens said, because its source language is written in PL/I. FTC's contract with OSI will run out in 18 months, and after that it plans to obtain hardware for in-house operation.

"PL/I has the potential of being converted to vendors other than IBM, which is one of the reasons we chose Inquire," Stevens said.

The agency started converting CPTS to Inquire in mid-January. In March the pilot program for a correspondence control system will be started, Stevens said.

"We receive thousands of letters every week from people about various problems," he said, noting this system will keep track of areas in which complaints keep recurring, a process previously done manually.

The effort saved from automating this process will be redirected toward solving problems rather than keeping track of them, he added.

The big advantage of a DBMS will be "a single source for the authority of data," Stevens said. He anticipates reduced cost and increased data accuracy with the DBMS.

NCR Preps Cobol '74 Subset for 8200

DAYTON, Ohio – Software enhancements for the NCR Century 8200 minicomputer series – including an operating system, associated utilities and a Cobol compiler based on ANS Cobol '74 specifications – will be available next month, according to NCR.

The 8200s were previously available only in turnkey applications or operating under Century 101 simulation.

The Interactive Multiprogramming Operating System (Imos) was designed to support concurrent operation of multiple programs in up to seven individual partitions, allowing the system to react to inquiries, requests and demands from several users at different terminals, the vendor said.

The initial release of Imos will back local CRT devices, dual disk units, magnetic tape cassettes and low-speed "unit record" equipment, such as line printers and card readers.

The second release, scheduled for July, will support remote CRTs and extend the backing for local peripherals as well, NCR said.

Low-Intermediate

The 8200 Cobol '74 compiler will, on first release, meet the Federal government's definition of a "low" implementation of the language. By the third quarter of the year, however, the developer expects to enhance it so it will then meet the "low-intermedicate" level, with some features in excess of that.

A spokesman was unable to compare the facilities in the NCR compiler with those in Hypo-Cobol, the variant of ANS Cobol '74 recently defined for small machines by a U.S. Navy team [CW, Dec. 24].

The 8200 Cobol will incude a first-level Nucleus and the first-level of the Table Handling and Sequential I/O functional processing modules. Support for Relative I/O will be there, but will not include variable length records, NCR acknowledged.

First-Level Debugging

The first level of Indexed I/O will be implemented, but the Sort/Merge and Report Writer modules will be omitted. First-level Library support will be included, as will first-level Debug module logic, except for Declaratives. The Compile Test Switch will be part of the compiler, NCR noted.

No support will be provided in the early 8200 releases for the Interprogram Communications or Communications modules, the spokesman added.

Imos will be free if it is the first operating system ordered with an 8200; otherwide there will be a $15/mo fee, NCR said. The associated utilities are subject to a monthly fee of $10 and the Cobol compiler will cost $25/mo.

DPMA Sets Workshop

PARK RIDGE, Ill. – A one-day workshop on information systems curricula in colleges and universities will be held April 6 in Chicago by the Data Processing management Association (DPMA) Education Foundation.

"This will be a by-invitation-only session for a select number of representatives from colleges, universities, government and industry," according to Roland D. Spaniol, the foundations's president.

George Glaser is coordinating all efforts for presentation of the workshop. Glaser is immediate past president of the American Federation of Information Processing Societies.

System Logic, Manuals Changed In Upgrade of 'SAM' Simulator

PRINCETON, N.J. – Version 4 of Applied Data Research, Inc.'s (ADR) System Analysis Machine (SAM), a discrete-event simulator for computer systems, is said to include modifications to allow modeling of state-of-the-art system software and hardware.

The release includes a rewritten Automatic Jobstream Generator (AJG) and libraries of predefined, parameterized models of system components for which specifications are known. AJG produces a jobstream from SMF data out of IBM's OS environment, ADR said.

The libraries within SAM include models describing a variety of IBM environments, such as DOS; OS with MFT or MVT; Hasp and ASP; OS/VS1 and VS 2.1; and Job Entry Systems (JES1 and JES2).

Simulations of CICS, and TSO and batch-oriented IMS are also part of SAM, a spokesman noted.

Macros describing IBM 360/370 and Univac 1100 series hardware are part of the system now; macros describing the Amdahl Corp. 470V/6 are in development and should be ready by mid-year.

The software library will be extended later this year with models of IBM's MVS versions of OS/VS2 and IMS DB/DC, the spokesman added.

In addition to system enhancements, all existing SAM documentation is being rewritten and manuals are being added. Seven updated manuals were sent out with initial deliveries of Version 4; others will be distributed as they are ready, ADR said.

SAM requires a minimum of 250K bytes on an IBM OS configuration, but installations typically use 300K to 500K bytes, the spokesman noted. The package is available for $58,000, for $25,000/year or for $3,000/mo, he added from Route 206 Center, Princeton, N.J. 08540.

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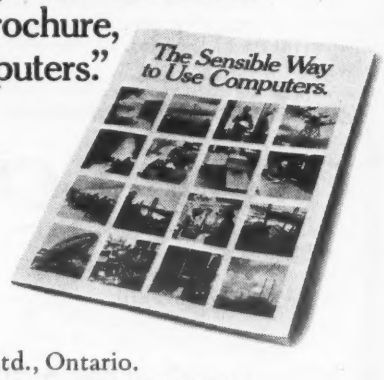

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Standard Deviations Allow Users to Plot Subjective Measures

By Michael F. Morris
Special to Computerworld

A problem exists with performance indicators such as response time, job/time period and the Computer Resource Unit (CRU) used by Boeing Computer Services' Sara – they don't have convenient (0 to 100%) limits to their values as did the simple equipment usage indicators used with the earlier Kiviat graphs.

Nor in most cases are the "good" and "bad" values at the extremes of the ranges. However, it is possible to set some goal within the range of variation that represents the "acceptable" performance level.

This is the second of two articles dealing with graphic means developed for describing the results of a performance evaluation monitoring effort. Last week's article outlined the development of Kiviat graphs and the plotting of specific, objectively observable measures of performance.

For example, the response time goal for one category of terminal users might be 15 sec – a longer time could cause user dissatisfaction; a much shorter time could demand excessive equipment expenditures.

Other categories of terminal users in the same system might have response time goals of, say, 5-, 45- and even 120 reflecting individual users' needs and the acceptable cost for computer resources.

The specific goals and acceptable ranges of variation around each goal would have to be determined by experiment and analysis. An implementation of this type of variable using Kiviat graphs could look like Figure 1. The 24 axes are hours of day at which observations were made.

The performance indicators in this figure could all be response time deviations, each for a different category of user, or they could be any combination of locally important performance deviation parameters. The "rings" above and below the goal might be percentages or time unit steps or standard deviations about the mean for each variable.

No Immediate Goal

The latter, statistical approach has the advantage of not requiring the user to set a "goal" at the outset. Instead, a statistical analysis of past performance data would produce a mean for each variable that could serve as the initial goal.

The indicators used in Figure 1 are actually plots of the observed standard deviations from the mean in the CRU rate (number of CRUs consumed per hour) for a large IBM 370 system over a 24-hour period. The rings represent the -2.0, -1.5, -1.0, -0.5, 0.0, 0.5, 1.0, 1.5 and 2.0 standard deviation levels.

The center is used to plot any observations at or below the -2.5 standard deviation level; the circumference is for plots at or above the +2.5 level. If it is accepted that all performance variation less than one standard deviation from the mean is satisfactory, or at least of no immediate interest from a performance standpoint, then the observations of Figure 1 may be replotted as in Figure 2.

In Figure 2, all standard deviations from -1.0 through +1.0 are plotted as points on the "normal" ring.

The meaning of the range of variation depicted by one standard deviation from the mean is that about 68% of all past observations lie within this range – a fairly reasonable definition of "normal."

Adopting this normalizing approach makes one take notice only of those observations where performance may truly be unusual. This shows in Figure 2 on the 1, 2 and 3 a.m. axes. The Kiviat graph of Figure 2 is analogous in both

(Continued on Page 20)

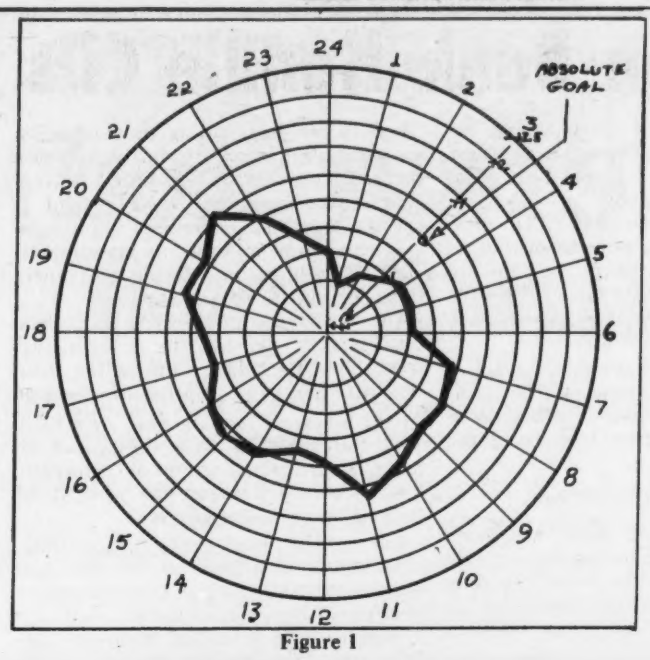


Figure 1

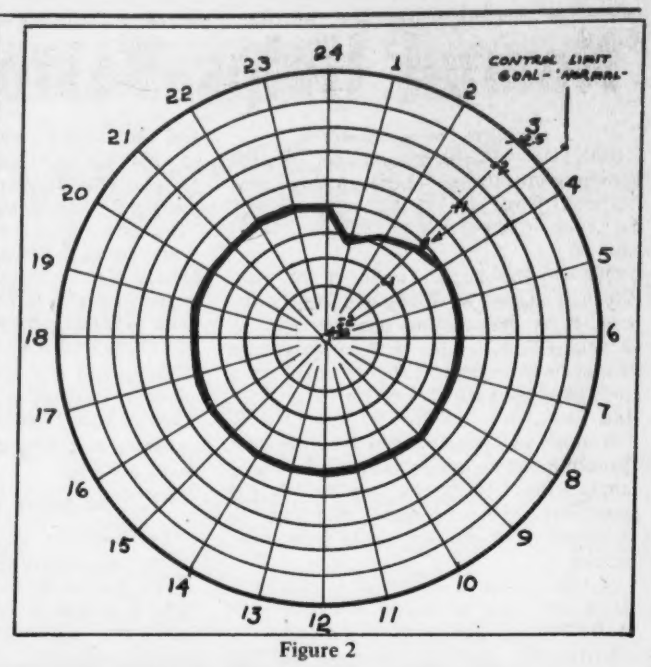


Figure 2

Just completed...a definitive study

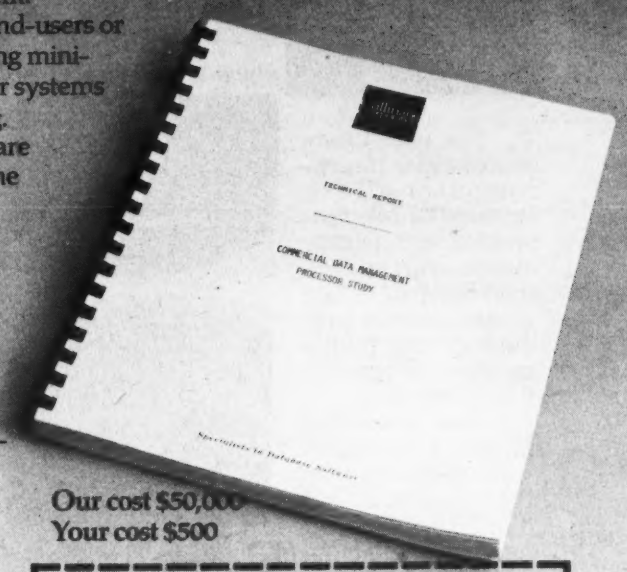
Back-end Database Management Systems

Developed by Cullinane Corporation with supporting research from a major university, this $50,000 study (jointly funded by Cullinane Corporation and several key potential end users) is a definitive state-of-the-art treatment. Purpose? To lead to a commercially viable back-end DBM system.

The study will be of real value to end-users or computer manufacturers interested in using mini-computers interfaced to IBM 370's or other systems in back-end or distributed data processing.

Not a theoretical treatment, these are the major subject headings which make the study practical and valuable:

- ☐ Back-end DBMS concept. Advantages, disadvantages, conclusions.
- ☐ Host/back-end configurations. Five possible arrangements.
- ☐ Database technology. CODASYL specs and IDMS implementation.
- ☐ Distribution of software in a host/back-end configuration.
- ☐ The inter-computer communications system. (ICCS)
- ☐ Mini-computer architecture.
- ☐ Back-end hardware requirements for a DBMS.
- ☐ An evaluation of 33 mini-computers for back-end use.
- ☐ DBMS performance in mini-computers.



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'Nomad' Helps Boston Bank Handle CDs

Special to Computerworld

BOSTON – A computerized system now provides the New England Merchants National Bank here with a timely method to spot Certificate of Deposit (CD) trends.

One of the larger banks in the New England states, New England Merchants, said it is maintaining control over its sizable CD portfolio with a data base management system called Nomad on a time-sharing basis from National CSS, Inc.

Nomad was developed to provide data handling and reporting facilities for many applications. Its application to the CD portfolio at New England Merchants is believed to be the first of its type in the nation.

A CD is a note issued for a term of at least 30 days, normally in amounts of $100,000 or greater. It is purchased by institutions, corporations, municipalities and individuals with large capital resources. The rates paid by banks fluctuate dialy as they respond to the factors impacting the capital market.

In computerizing the bank's CD operations, David E. Patch, vice-president of its Money Market Department, said the objective was a system that would give the bank a firmer picture of the distribution of CDs by customer classifications.

The reports that are generated include a detailed analysis of maturing CDs, summary of daily and monthly activity and an analysis of the rate structure of the entire porfolio.

Decided on Time-Sharing

"The need to make timely decisions moved us toward time-sharing, since it allows immediate access to our large data base, and Nomad, in particular, for its ability to organize and process diverse data," Patch said.

One factor contributing to the bank's need for diverse reports is the seasonal factor of the CD market. Thrift institution customers of the bank present a specific data base assignment since these customers tend to time the maturing of their CD holdings to coincide with municipal property tax payment dates.

The data base system processes data into reports showing the number and worth of CDs held by the thrifts, their due date and other relative information.

With access to its data base, New England Merchants can trace the history of any CD customer or groups of customers. This information assists the bank in directing its marketing efforts.

Interestingly, Patch noted, such information is now unavailable or too time consuming to handle accurately by manual or traditional computer methods.

National CSS is at 300 Westport Ave., Norwalk, Conn. 06851.

Monographs Ready

WELLESLEY, Mass. – The Data Base Monograph Series from QED Information Sciences, Inc. conveys "information, analysis and opinions about data base management without the time lag common to more formal publication procedures," the vendor said.

Three monographs are available now; others will follow as they are completed, QED said. Series editor is Robert M. Curtice, staff member of Arthur D. Little, Inc., a consulting firm.

The first two reports – the first on access mechanisms and data structure support and the second on planning for data base systems – were both written by Curtice.

"Data Base Design Methodology" by Paul E. Jones Jr., also of Arthur D. Little, Inc., is the third in the QED series.

The reports are $15 each ($12.50 if prepaid) and can be ordered from QED, P.O. Box 181, Wellesley, Mass. 02181.

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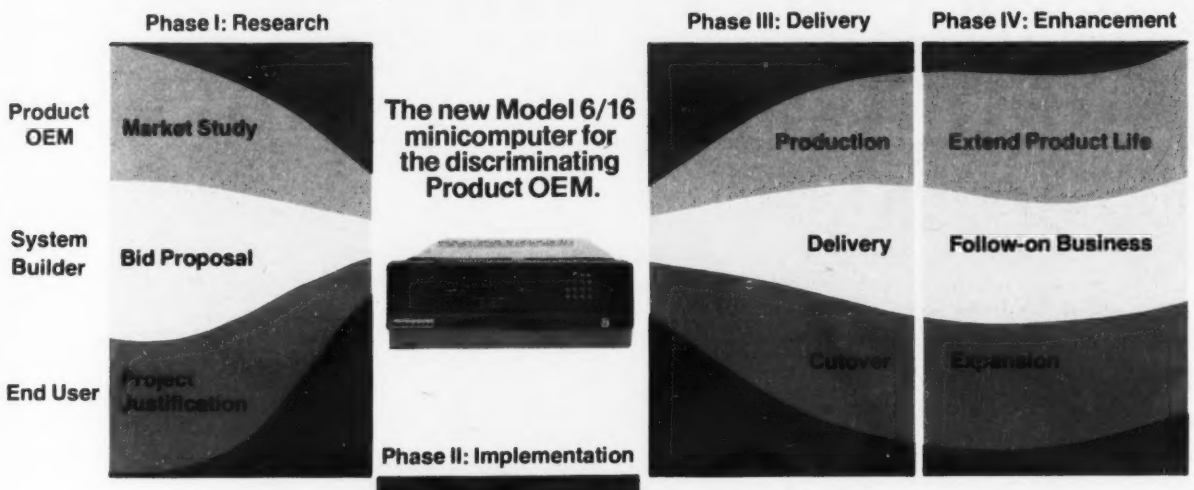

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Standard Deviations May Help CPE Plots

(Continued from Page 19)

shape and meaning to the circular charts in the medical application which spawned the graphic idea for the computer performance evaluation field. That is, let "normal" alone, react to "abnormal."

In Kiviat graphs like Figure 2, as in all previous versions, the specific number of axes, scaling on each axis and the quantity or quantities plotted are entirely at the user's discretion.

The value of Kiviat graphs like Figure 2 is that the attention of a performance evaluation specialist is directed specifically at the few areas or times where further analysis is needed. Figure 2 shows clearly and immediately the performance indicator is abnormally low on axes 1, 2 and 3. It does not show what to do about it.

'Control Limits' Concept

There has been speculation that display of a Kiviat graph like Figure 2 in near real-time might allow operations personnel to react to unusual performance changes as the system operates. Of more importance in this display is the fact that the "control limits" concept of capacity management is taken into consideration.

In the control of many manufacturing processes, acceptable bounds of performance are preset and only variations outside these control limits cause an operational reaction. The idea of incorporating "control limits" into computer performance evaluation (CPE) projects has been suggested at various times by Dr. Thomas E. Bell of the TRW Systems Group.

Not Yet Applied Widely

There has not yet been wide application of this last type of Kiviat graph. However, it is believed the ultimate value of these graphs as tools for specific direction of CPE projects and for continuing use in managing computer systems will be greatly enhanced by incorporation of the "capacity management" and "control limits" concepts in the computer environment.

A by-product of this effort may well be that we can state, at least on an installation-by-installation basis, what "normal" is for each computer. This will indeed have been worth the effort.

Information on Kiviat graph applications and developments should be sent to me in care of Boeing Computer Services 7777 Leesburg Pike, Falls Church, Va. 22043, for inclusion in future descriptions of progress in this field.

Morris is president of Smart, Inc., a performance evaluation and auditing firm in the Washington, D.C., area.

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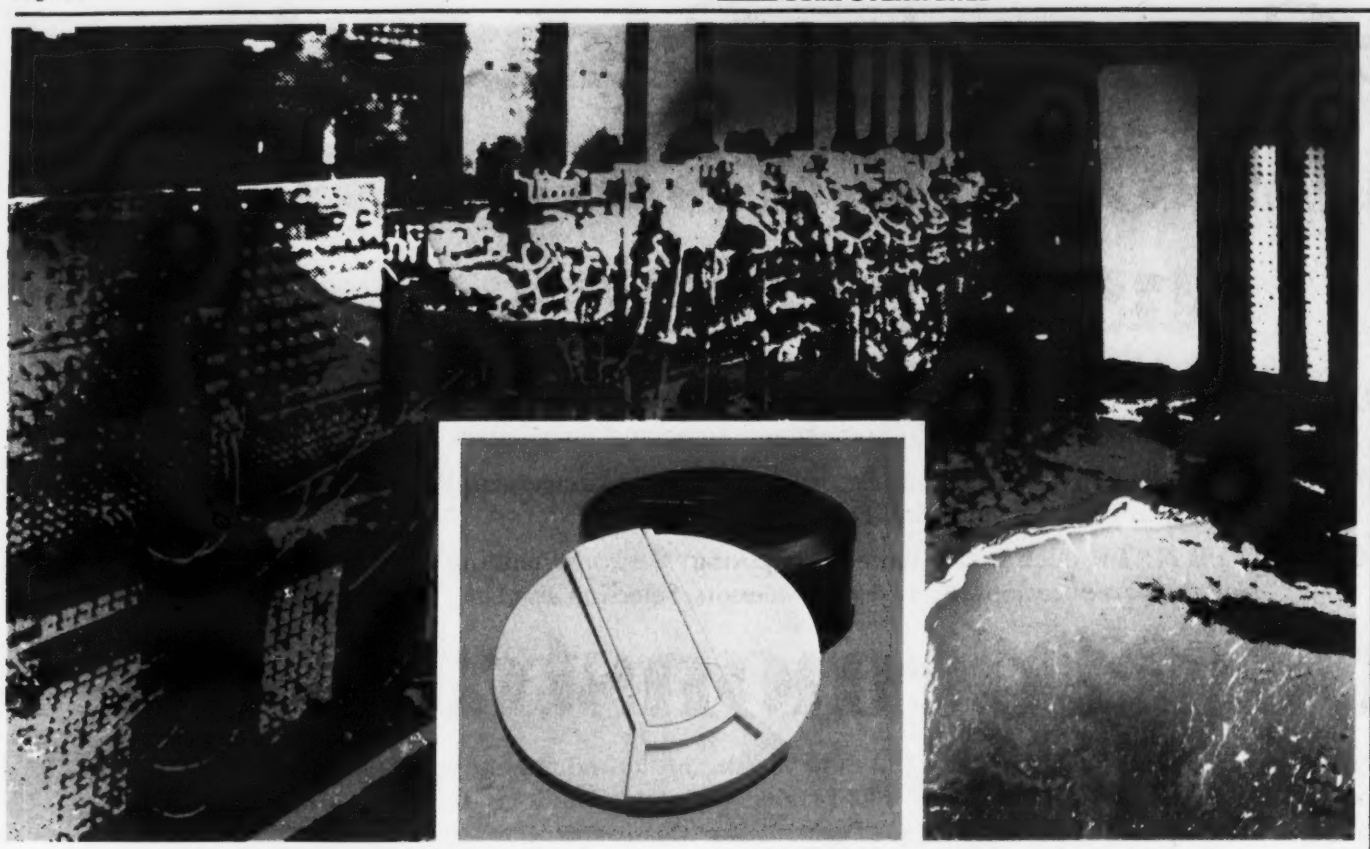

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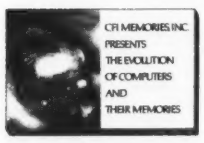

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'CDRD' Displays CICS Records

GREEN BAY, Wis. – The CICS Disk Record Display (CDRD) package from Dynamic Products enables users working under DOS or DOS/VS to examine portions of selected records on a CRT screen.

The program logic was designed to work with IBM's 1,920-character 3270 terminals.

Once triggered by a key-in calling for CICS and identifying the channel, unit and disk record address, CDRD will display up to 320 bytes of the record.

If the record is more than 320 bytes long, users may key in an address within the record at which they wish the display to start. Alternately, they can roll through the record, 320 bytes at a time, by repeatedly depressing the Enter key.

CDRD comes with its own DOS or DOS/VS transient routine to dynamically assign the disk drive requested by the user

Assembler language source code for CDRD and relocatable object code for the transient are available for $450 from Dynamic at P.O. Box 3445, Green Bay, Wis. 54304.

Appraisers' Package Watches Fixed Assets

LOS ANGELES – The M&S Fixed Asset Management System (MSFAMS) from Marshall and Stevens, Inc. provides an audit trail of all asset dollar activity and physical movement of all assets, capitalized or not.

Each user can specify accounting procedure, fiscal year, processing frequency, organization structure and report options, the vendor said.

The Securities and Exchange Commission's Replacement Cost Accounting procedures are available through this package, the company added.

Tax depreciation can be optimized under conventional or Internal Revenue Service Asset Depreciation Range (ADR) rules, a spokesman claimed.

MSFAMS also recalculates annually property values for fire insurance coverage and provides asset descriptions for using departments, he said.

The system is written in Cobol and runs on IBM 360/370 systems with 64K bytes available.

It costs $11,000, plus $2,500 for the optional ADR module, and can be ordered from 1645 Beverly Blvd., Los Angeles, Calif. 90026.

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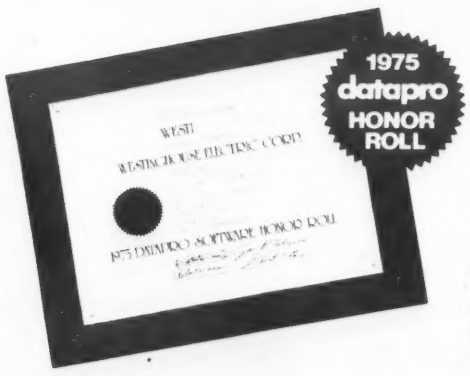

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As AT&T Countered Competition

FCC Says Users Paid for Bell Data Set Development

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – In the early 1970s, noncarrier modems made up 18% of the data sets then in use. To counter this competition, caused by the Carterfone interconnection ruling, the Bell System spent $2.1 million to develop a new line of data sets – and users paid the bill, according to a Federal Communications Commission (FCC) report.

In the interim period while new Bell data sets were under development. "Bell data customers were saddled with high cost and outmoded data modems for nearly two years," according to the FCC trial staff report issued as part of an ongoing examination of AT&T's economic structure [CW, Feb. 9].

In January of 1971, the Bell Customer Products Council (CPC) "approved a plan for review of data hardware to provide a comprehensive comparison of Bell System and non-Bell System data sets and data terminals," according to the FCC report. The study called for the use of non-Bell System modems to test and evaluate the existing AT&T data sets. The "results were not encouraging."

In a presentation to the CPC in July 1971, a representative of Bell Laboratories gave a status report on the Data Set Competition Study. As a result, an AT&T assistant vice-president said "we have allowed our competitors to get seven to 10 years ahead of us in [data set] design," the report said.

As a result of this assessment and the study, AT&T embarked on a five-year development effort because the Bell System "considered its current data service to be inferior." Instead of offering modems from noncarrier suppliers during this development period, Bell adopted a "nonbuy policy that was not in the best interest of the Bell data customer," the report said.

To counter problems resulting from slow development lead times, the Bell operating companies were told Western Electric "can and will provide data sets for real competitive situations."

Apparently customers who were considering the purchase of competing non-Western Electric modems would receive the Western Electric equipment "on a higher priority than those faithful customers who were willing to wait," the FCC report said.

Considered Silencing Opposition

Despite the recommendations of several AT&T management officials, AT&T did not provide noncarrier equipment to its customers during the development period, the report said. One "strategy consideration" in this make/buy decision was the possibility of silencing the opposition, the report said.

The Western Electric "inability to provide data modems on a timely basis resulted in lost revenues by the Bell operating companies due to late starts and lost sales," and the Bell System goal of developing its own data sets (which included the 208 and others) "was not achieved without a cost to the ratepayer," the report said.

The Bell System data set developmental process "was extremely slow" compared with that of the independent suppliers. This was because of the unprecedented number of organizational interfaces within the Bell System.

Independent suppliers gained their foothold only after the "forced elimination" of Bell antiinterconnection practices, the report said. Before Carterfone, Bell relied on its monopolistic position to thwart threats in the modem area.

And even after Carterfone, "competition was not entirely on an equitable basis as the use of the [Bell] Data Access Arrangement was still required by the end user of the [dial-up] network if he chose to go non-Bell," the report said.

IBM Adds 5937 for Rugged Plant Sites

WHITE PLAINS, N.Y. – IBM has introduced in the U.S. a display terminal designed to operate in severe environments such as industrial plants.

Called the 5937, the terminal was developed at IBM's Nordic Laboratories and first introduced in Sweden [CW, Aug. 28, 1974].

The terminal has a flat Mylar panel instead of the conventional keyboard. On the panel are colored squares and circles which represent 26 letter, numeric and function keys for controlling the display.

Command keys for initiating terminal operations are grouped in a separate cluster, IBM said.

When an operator pushes on the Mylar sheet on one of the squares or circles, the panel is brought into contact with a similar panel underneath. On both panels small areas of conductive metals are pressed together to generate the signal indicated on the front panel, IBM explained.

IBM 5937 Industrial Terminal

Works With 3270

The 5937 can be attached to the same communications lines as terminals in IBM's 3270 information display system, enabling users to add the 5937 to existing plant communications systems; the 5937 operates with most 370 CPUs, IBM said.

The 5937's gas panel display can accommodate six lines of 40 characters each for a total of 240 characters. The display can be directed to flash on and off, signaling the arrival of a message from the CPU or highlighting specific data.

The terminal has formatting capabilities similar to the IBM 3270, enabling it to display a "fill-in-the-blanks" form for data entry.

Up to 16 individually addressable remote input lines may be linked to 5937, allowing the operator to read data from temperature sensors, counters and similar equipment located in other areas of the plant, IBM said.

Display information (a reading from a counter, for example) can be initiated either from the keyboard, by the CPU or by a "read-request" signal sent to the terminal from the remote counter.

Output commands – to turn on or off a switch or to open or close a valve – can be sent either from the keyboard or by an application program in the mainframe.

Up to eight output devices may be attached to the terminal, IBM said, and input and output operations can be executed from the keyboard if the communications link to the 370 CPU is unavailable.

The 5937 communicates with virtual storage 370/115 to 370/168 CPU models under Binary Synchronous Communications (BSC) or Synchronous Data Link Control (SDLC) line disciplines.

The terminal also can be attached to an IBM System/7 and can be connected to the same four-wire communications lines as terminals in the 3270 system, which permits users to add the terminal to existing plant communications systems.

The IBM 5937 Model S01, including optional digital input and output and BSC capabilities, can be purchased for $12,545. It is also available under IBM's recently announced Alternative Term Plan (ATP), with a 60-month contract period, for $385/mo.

Equipped with SDLC communications capability, the 5937 can be purchased for $15,000 or leased for $444/mo.

First customer shipments are scheduled to begin this summer for BSC units and in the summer of 1977 for SDLC units.

Penril Division Offers Modem For Multipoint Polled Operations

ROCKVILLE, Md. – Penril Corp.'s Data Communications Division has introduced a modem for multipoint polled operation applications.

The 48/Multi data modem transmits at 4,800 bit/sec through unconditioned lines operating in either full duplex over four-wire networks or half duplex over two-wire networks, the company said.

The 48/Multi is an eight-phase, differentially coherent modem offering single-station equalization and requiring no operator intervention at the remote station, according to the firm.

The modem has built-in diagnostics that include analog/digital loopback, remote test, integral signal quality meter and self-test, Penril said.

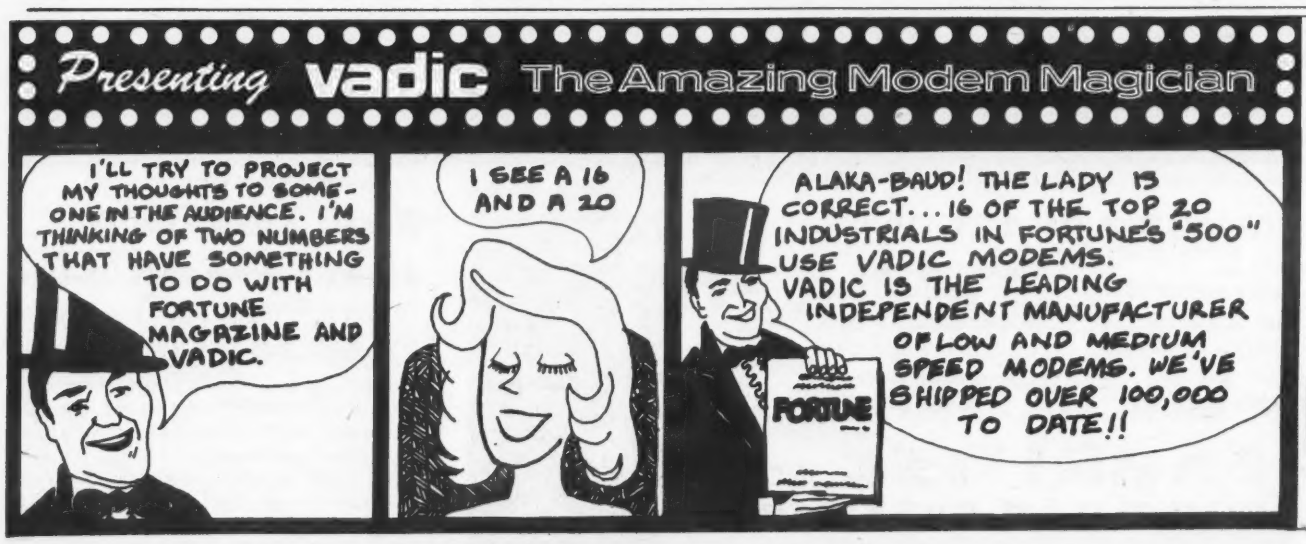
It is contained on three printed circuit cards mounted in a freestanding cabinet with integral power supply; it is also available as a rack-mounted unit, the company said.

The 48/Multi is priced at $2,395. Delivery is 30 days from Penril at 5520 Randolph Road, Rockville, Md. 20852.

DTC Cuts Terminal Prices

CAMPBELL, Calif. – Data Terminals and Communications (DTC) has reduced prices on its line of Diablo Hytype printer-based terminals up to 33%, the company said.

The price reductions are effective immediately, DTC said from 1190 Dell Ave., Campbell, Calif. 95008.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After Meeting With Industry

Canada Agency Sets Terminal Interconnect Standard

By Gordon D. Hutchison
Special to Computerworld

OTTAWA – A terminal device interconnection standard and procedures, delayed once because of severe industry criticism, will be introduced here Feb. 23 by the Canadian Department of Communications (DOC).

A meeting was recently held here to give industry another chance to comment on Phase I of the program.

Removed from Standard CS-01 are all references to operational characteristics not related to network protection. In the January meeting it was agreed the device should function following testing, but that a subjective performance evaluation by testing laboratories was not valid within the terms of the attachment program.

The carriers vigorously fought any changes to the network-protection aspects of the standard. The Communications Department gave way in a number of areas on its testing procedures.

Manufacturers of lower priced devices were looking for ways to minimize costs, while makers of higher priced devices were avoiding submission, for example, of a complete computer system for testing so that it could be connected to a dial-up network.

Private Laboratories Authorized

The Jan. 7 draft of the certification procedure provided for the authorization of private laboratories as well as the federal government to test equipment.

In the case where private Canadian laboratories conduct the test, a registered Canadian professional engineer must attest, sign and seal the report to be submitted for government certification.

Organizations sourcing equipment offshore, and offshore manufacturers, asked at the meeting to be permitted to test their equipment in their own laboratories, with an appropriate attestation by a Canadian professional engineer.

No final decision has been made in this area, but discussions with the Canadian Standards Association (CSA) are being held to determine whether DOC could use the CSA's offshore testing procedures.

A registered Canadian professional engineer would still have to witness the tests and sign the report.

Organizations establishing test facilities must equip their laboratories with the test equipment specified in the certification standard, keeping the equipment calibrated and maintained in accordance with the National Reference Standards of the National Research Council.

A registered Canadian professional engineer must be available to the laboratory, and the personnel employed to conduct testing must be the competent. It is estimated it would cost $120,000 to establish such a facility.

All applicants for certification must demonstrate the existence of a Canadian maintenance facility capable of returning a malfunctioning unit to its original operating condition.

Some offshore suppliers argued it would be just as simple to ship units to factory repair depots. However, it is thought shipping over the border would involve complications.

Under the terms of the revised procedure, devices which qualify for direct connection to the network provided by the carrier must also meet the requirements prescribed for certification. A carrier entering the competitive market for such equipment must be certified.

Notice of Changes

Carriers are also required to give notice of planned network changes if the changes will, in any way, obsolete terminal equipment connected to it. The carriers are required to notify DOC and the subscribers within the affected service area. DOC will notify certification holders and known interested parties.

All terminal equipment subject to the Canadian Electrical Code must receive CSA certification before DOC will certify it. Any engineering changes to the equipment which may affect the operation of the device with respect to the network must be filed with DOC.

Disputes arising from the certification procedures are to be resolved between DOC and the applicant; disputes relative to carrier tariffs are to be resolved between the carrier and the customer, with the right of appeal to the Canadian Transport Commission.

Phase II of the program, to include data processing-related devices and network addressing and control devices, will be executed after the basic mechanisms are in place under the first phase.

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Option Allows Use Of Dial-Up Network

ANN ARBOR, Mich. – Sycor, Inc. has added a dial-up option to its Model 255 stand-alone terminal.

The dial-up terminal was designed for users with an IBM 3270 interactive network who have a minimum number of transactions to send and cannot justify the cost of a private line.

The dial-up option adds $18/mo, including maintenance, to the $142 monthly price of the Model 255 on a one-year lease. The purchase price of the option is $525, from Sycor at 100 Phoenix Drive, Ann Arbor, Mich. 48104.

Modem Backup Switch Allows Replacement On-Line

PROVIDENCE, R.I. – International Data Sciences, Inc. (IDS) has introduced the Model 8509 spare modem backup switch, which allows a single spare modem to be switched in to replace any one of a group of on-line modems by operating a front panel switch.

The 8509 switch is compatible with all modules in the IDS Series 8500 EIA Switch Patch and Monitor Systems.

Price of the 8509 is $220, IDS said from 100 Nashua St., Providence, R.I. 02904.

Druggist Decreases Ordering Time With Portable Unit

By John P. Hebert
Of the CW Staff

LAKEWOOD, Colo. – An independent druggist here has found placing orders with the help of portable data terminals is saving him time.

Almost every item in the store which comes from the pharmaceutical supplier to Holiday Merit Drugs is now ordered electronically, John Chapman, owner of the store, said.

About a year after the supplier, Davis Bros. in Denver, automated its ordering and inventory process, Chapman decided to convert to an electronic ordering system (EOS), he said.

The system is "a real help for the professional store," he said.

Although his store is rather small compared with chain stores at 5,000 sq-ft, "It has more to do with how busy you are," Chapman said, explaining his move to EOS.

Holiday Drugs now uses an MSI Source 2001 portable data terminal to collect information on items the store needs to order, Chapman said.

Installing the EOS in the store was no problem, and the only "hassle" was the user had to affix pressure-sensitive labels which contain order number information to each item ordered through EOS.

"Affixing the labels is just something that has to be done," Chapman explained.

The procedure for ordering merchandise takes about a half hour each day, Chapman said, adding it had previously taken him and an employee about four hours of daily routine work.

An employee walks around the store with the terminal tape recorder and keys a number, representing the particular product and the quantity of each item which needs reordering, Chapman explained.

When all the order information has been captured, the order is placed with the supplier by connecting the recorder terminal to an MSI Source 2320 telephone interface.

Terminal Transactions

A two-minute-or-less transmission over the store telephone is usually sufficient to place an order, compared with the 45-minute telephone conversation formerly required, Chapman said.

The terminal transmits the message at 60 char./sec to the computer system at Davis Bros.' warehouse, which prints an order for warehouse employees and then prints a listing for Holiday Drugs, he said.

Computerized reports generated through electronic ordering help manage inventory and improve merchandise turns through more efficient shelf allocations, Chapman noted.

For example, with the analysis sheets or item classification reports, it can be seen if some products can be ordered in larger quantities to save money, he said.

Besides these benefits, the shipment from the supplier is broken down into separate orders. "We don't have to open up the boxes and be surprised with what's in the box," he added.

The employees are now more efficient – "there have been changes in work assignments – EOS didn't replace any employees – but they are free to do other things like concentrate on customer relations," Chapman said.

Protect Option Added To Ann Arbor K2480D

ANN ARBOR, Mich. – Ann Arbor Terminals, Inc. has added a protected data option to its recently introduced K2480D terminal.

The combination of the protected data option and standard batch transmit feature of the terminal is said to give the user a communications terminal which lends itself to form-filling applications.

The option uses character accent as the visual means of designating the form on the screen with protected characters. Form generation may come either from the operator or the computer, the company said.

When the SEND command is issued, only the unprotected parts of the form are transmitted, leaving the form itself intact. When required, the protected characters may also be sent. The Protected mode may be used for either conversational or batch applications, the company added.

Output from the terminal is Ascii-coded, 11-unit asynchronous serial data transmitted at 625 char./sec at 9,600 bit/sec, the company said.

The K2480D with batch transmit and the protected data option is $1,820, the firm said from 6107 Jackson Road, Ann Arbor, Mich. 48103.

ITT Announces Discounts On Asciscope Equipment

EAST RUTHERFORD, N.J. – A reduced price schedule for purchases and rentals on one- and two-year leases of Asciscope Teletype-compatible displays is available from the ITT Data Equipment and Systems Division (DESD).

For quantity users, monthly rentals will be $49/mo under a two-year lease. The two-year lease price was dropped from $79- to $65/mo.

DESD is at East Union Ave., East Rutherford, N.J. 07073.

IMI Has Bar-Code Reader

MOUNTLAKE TERRACE, Wash. – Interface Mechanisms, Inc. (IMI) has added a bar-code reader with Ascii communications output capability to its previous reader model.

The Model 9106 reads bar-code tags or labels for subsequent data transmission or input to a minicomputer or data terminal system, the company said.

The unit's communications interface is compatible with asynchronous serial rates of 110-, 150-, 300-, 600-, 1,200- or 2,400 bit/sec; optional rates are available up to 9,600 bit/sec. Parity checking and stop bits are switch-programmable, it said.

The reader is offered on an OEM basis and sells for $1,380 each in quantities of 10, with deliveries from 30 to 60 days, the company said from 5503 232nd St. S.W., Mountlake Terrace, Wash. 98043.

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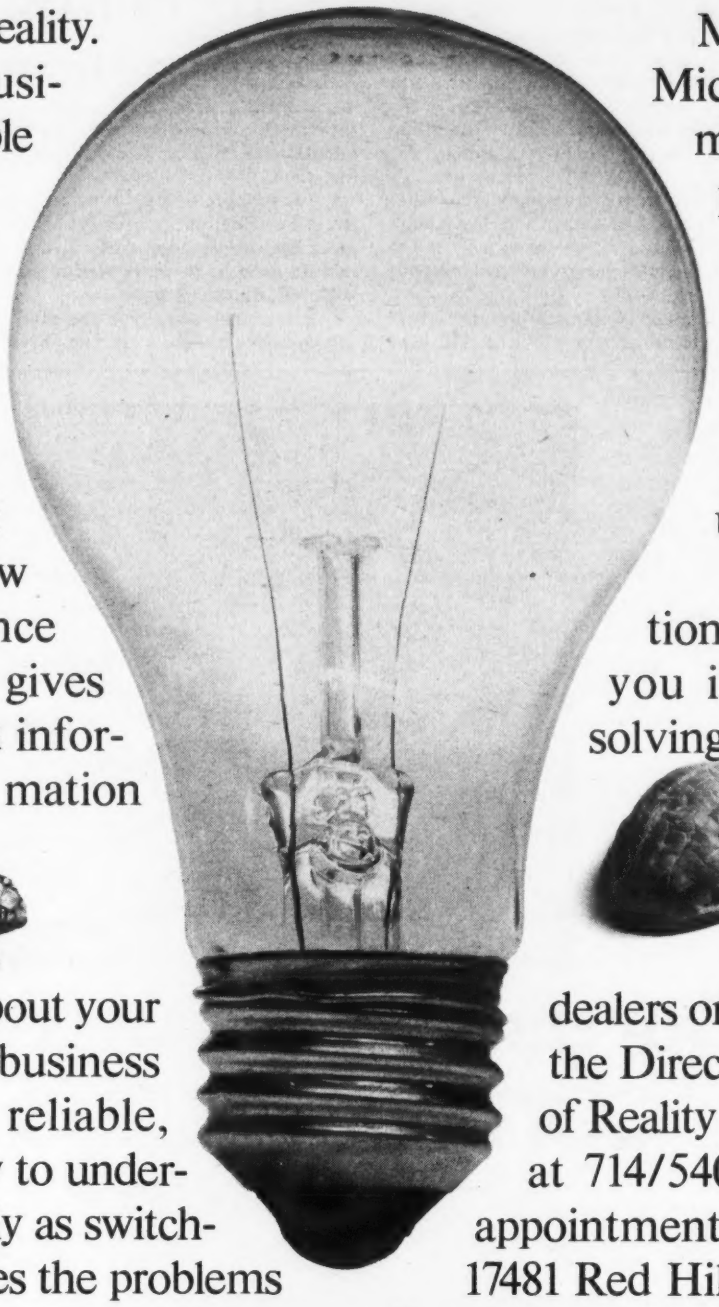

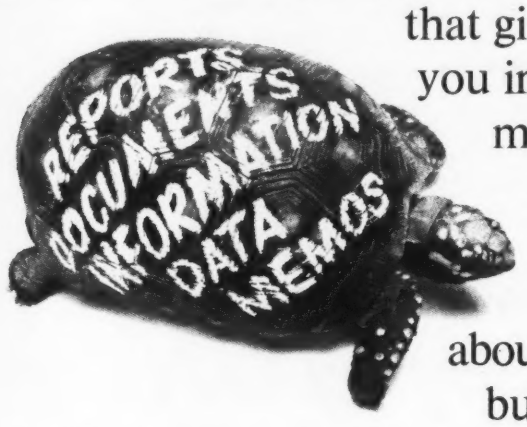

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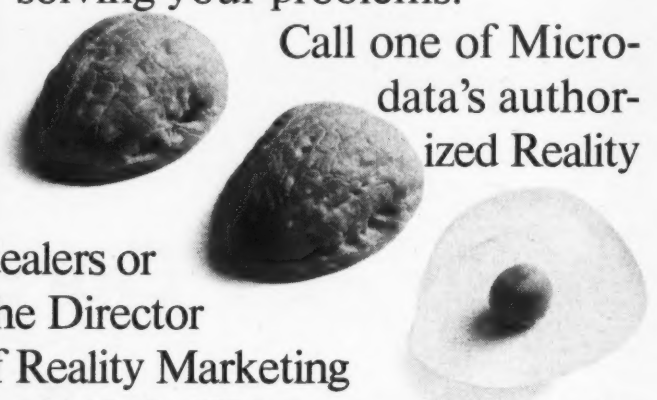

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Bits & Pieces

Monarch OCR-A Printer Makes Tags for Scanning

DAYTON, Ohio – The Model 1640 Data Dial, an OCR-A printer from Monarch Marking Systems, Inc., was designed to print merchandise tags and labels for scanning by optical character recognition (OCR) systems.

The Model 1640 offers all the needed OCR-A characters to comply with present National Retail Merchants Association standards, Monarch said.

The Model 1640 can print the style, size, color, vendor, store number, price and other information about a product, Monarch said.

The retailer can then run the tags through an OCR scanning system to obtain sales and merchandise management information.

The Model 1640 costs $885 from the firm at P.O. Box 608, Dayton, Ohio 45401.

NMA Publishes Free Guide

WASHINGTON, D.C. – The National Micrographics Association (NMA) has published the sixth edition of its free *Buyer's Guide*, an annual listing of micrographic equipment, products and services.

The guide lists NMA member firms by their products and services and includes a geographic as well as an alphabetical listing of company names and addresses.

The 64-page publication is available from NMA Publication Sales, 8728 Colesville Road, Silver Spring, Md. 20910.

CLA Paperback on CPU Selection

WASHINGTON, D.C. – *The Intelligent Guide to Computer Selection*, published by the Computer Lessors Association, Inc. (CLA), is a "cost-cutting, commonsense view of computer selection involving IBM 360 and 370 equipment," according to the organization.

Contents of the 60-page paperback include sections on "Do You Need a New Computer System?" and "System 360 vs. System 370."

The paperback costs $9.95 from the CLA at 1212 Potomac St. N.W., Washington, D.C. 20007.

Tape Head Meets Standards

DEER PARK, N.Y. – Creative Magnetics, Inc. has a cassette magnetic tape head which, it said, meets all proposed Ansi/Ecma standards.

The Model 81002 operates at tape speeds up to 165 in./sec, the company said from 49 E. Industry Court, Deer Park, N.Y. 11729.

DSC Multiprocessor Aimed at T/S Users

By Patrick Ward
Of the CW Staff

FREDERICK, Md. – The Galaxy/5 multiprocessor system from Digital Systems Corp. (DSC) could eventually compete in the general-purpose medium-scale processor arena at a price 50% below IBM's 370/115 to 370/145 models, a spokesman for the systems house said.

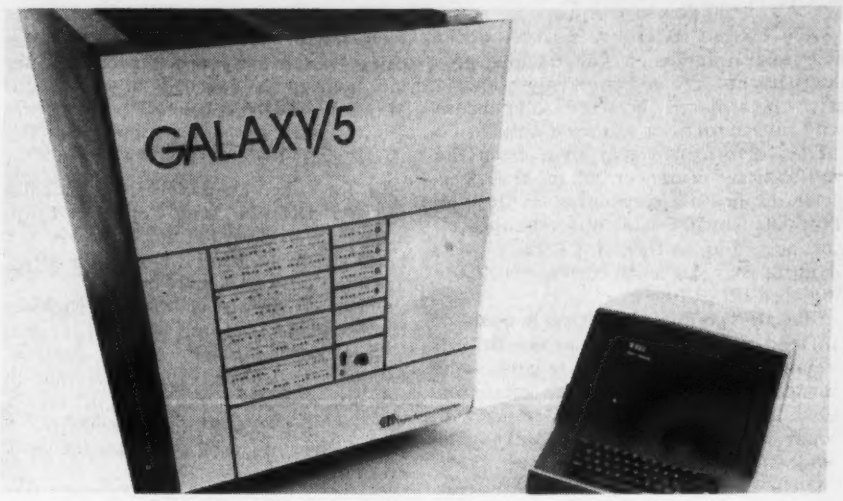
But the company plans to develop high-level language compilers and utilities before it aims at replacing users' general-purpose CPUs, a spokesman said.

In the meantime, the Galaxy/5's strength lies in its ability to handle a large number of on-line terminals more cost-effectively than a general-purpose mainframe can, the spokesman said.

The Galaxy/5 system consists of one to four processors. Total memory can range from 32K bytes to 1M byte of shared, interleaved memory; one to four direct memory address (DMA) units can also share the memory, DSC said.

The system's memory access time is about 450 nsec. Each processor has an internal execution speed of about 125 nsec; all processors can execute concurrently, the spokesman said.

"We anticipate a 50 kbit/sec transfer rate through each DMA unit," the spokesman said. However, faster transfer rates will be available later on, he added.



Digital Systems Corp. Galaxy/5 Multiprocessor System

Intel 8080 microprocessors serve as communications handlers on each of the system's I/O ports, eliminating the need for a teleprocessing monitor in the host, DSC said.

These programmable communications interfaces can handle asynchronous and bisynchronous communications plus IBM's Synchronous Data Link Control, the spokesman said, adding the largest Galaxy/5 could reasonably handle about 60 terminals.

The DMA units are built around programmable microprocessors, as are the system's disk and printer controllers, which should simplify field upgrades and give the Galaxy/5 added flexibility in interfacing peripheral units, the spokesman said.

The minimum Galaxy/5 system consists of a 32K CPU, a 32M-byte disk drive and controller, a 100 line/min printer and a single CRT. This configuration costs $42,150.

A medium-size system consists of a 128K memory, two CPUs, two 120M-byte disk drives, two 400 line/min printers and 10 CRTs and costs $137,750.

The maximum configuration includes 1M bytes and four processors, 10 240M-byte disk drives, five 400 line/min printers and 60 CRTs for about $1 million, the company said.

Delivery of the 32K and 64K-byte Galaxy/5 models is 120 days. Deliveries on the 128K- and 256K-byte versions are set for Oct. 1.

DSC is at 10 W. College Terrace, Frederick, Md. 21701.

Bonded Services Offers Center To House N.Y. Users' Vital Data

FORT LEE, N.J. – Users in the New York metropolitan area who want to store vital tapes and disks for backup protection or other reasons can do so in Bonded Service's newly built Dataguard Center here, the vendor said.

The Dataguard Center is a fireproofed concrete block and steel structure with a capacity to store more than 100,000 tape reels and disks, the company said.

The center will be the first of several across the country, Bonded Services said.

The facility is equipped with automatic chemical fire-suppressant systems (Halon 1301), and its controlled atmosphere is monitored to maintain the temperature- and humidity-level specifications of the American National Standards Institute (Ansi), according to Laurence E. Tobin, Bonded's director of information security services.

Electrostatic air filtration ensures a dust-free environment within the center, and the structure is free from magnetic fields which can permanently mar electronic data media, he said.

"In addition to its location within Bonded's information security complex, the center is further protected against intrusion with alarm systems and photoelectric sensors," Tobin said.

Bonded's Information Security Audit program offers to current or prospective Dataguard users an analysis of their in-house data security system, he added.

Other support services include around-the-clock access, retrieval and delivery of data media; data inventory and indexing services; and certified information destruction.

The typical cost of storing 1,000 tape reels would average out to 34 cent/reel/mo, including pickup, the inventory record, indexing and maintenance, Tobin said.

Bonded Services is at 733 Third Ave., New York, N.Y. 10017.

Spur Adds 1403-Compatible Unit

SANTA MONICA, Calif. – The Spur Model T is an IBM 1403-compatible impact printer that combines the printing quality of a chain or belt printer with the reliability and speed of a drum printer, according to its vendor, Spur Products Corp.

The Spur Model T is compatible with either the IBM 2821 controller, which interfaces IBM computers to the 1403, or with the Grumman printer controller, which links non-IBM mainframes to the 1403.

The Spur Model T does not offer the interchangeable fonts or special characters found on the 1403, Spur noted. The model T's drum will also be limited to 60 characters.

The Spur Model T costs $15,000 with delivery beginning in August from the firm at 2928 Santa Monica Blvd., Santa Monica, Calif. 90404.

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SPECIFIC FONTS _____
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Bureau Credits Keypunch Gain To Units Equipped With Micros

By a CW Staff Writer

SAN FRANCISCO – A service bureau here said it increased keypunching productivity by 30% and cut costly overtime after it replaced buffered keypunches with microprocessor-equipped units.

The performance gain arose from the verification, error correction and character duplication capabilities of the Tab Products Co. 501 data entry microprocessor, according to Dale McLaughlin, president of Bay Data Processing. The 501s replaced IBM 129s.

The 501 permits the verifying operator to feed a card into the machine as he is keying the data from the original document into memory. The unit's microprocessor compares the data in memory with what it reads on the card, McLaughlin said.

If the data doesn't match, the error can be corrected, he said. To correct an entire field, the operator can use the "core" key; to correct a single column, he can use a reset key, McLaughlin explained.

After the error has been corrected, the machine automatically does a field repeat and makes the operator reverify the field where the mistake appeared.

Corrections Punched

When reverifying is complete, the 501 automatically feeds a blank card from the auxiliary hopper and punches the corrected information onto the card where it belongs, McLaughlin said.

While this is going on, the operator will have started verifying another card, he explained.

Another feature McLaughlin praised is the 501's constants feature.

"Suppose you have two types of cards you're punching for an invoice and one card needs the date keyed in and the other doesn't.

"On the 129 you couldn't dupe that date in because you'd lose it on the second type of card. On the 501, you can store the date in the constants, and when you want to key the date in you call for it by program code.

"The 501 then automatically punches it only in the desired card, eliminating the need to key it in every time," he explained.

McLaughlin never considered conversion to a key-to-disk data entry system because "we're just not big enough for key-to-disk," he said. "We'd need about 10 machines to break even."

Other Machines

As for other keypunches, McLaughlin tested a Decision Data Computer Corp. keypunch system but said "it was not better than the IBMs we were replacing, and they were very noisy besides."

Operator acceptance of the machines has been "tremendous," McLaughlin said. "The keyboards are nearly identical, except for a couple of switches, and all our operators showed a strong preference for the 501s over our old keypunches."

Bay Data Processing does all batch work on an IBM 360/30 system.

CDC Has Seismic Array Processor For Its Large-Scale Computers

MINNEAPOLIS – Control Data Corp. has a microprogrammable matrix array processor that it said handles seismic data at speeds measured in "microsteps" of .00015 sec.

Called Map III, the unit operates with one or two CDC 6000, Cyber 70 or Cyber 170 host computers to enhance the CPUs' data throughput, precision and accuracy, CDC said.

Map III uses parallel array processing and high-speed floating-point hardware to perform large volumes of repetitive calculations, CDC added.

The basic Map III includes a 24K (32-bit words) self-contained memory divided equally among three simultaneously accessible data storage files, as well as single add/subtract, multiply and divide function units.

Memory is expandable to 256K. A maximum Map III configuration includes two square root and two divide processors with four each of the multiply and add/subtract units.

Purchase price for the basic processor is $325,000 and includes a one-time software installation charge of $15,000. Monthly lease under CDC's three-year commercial term plan is $8,860. Maintenance of purchased or leased systems is available for $1,684/mo.

System deliveries currently are scheduled 10 months after receipt of order. CDC is at P.O. Box O, Minneapolis, Minn. 55440.

Emerson Tape System Set for Non-DP Sites

SANTA ANA, Calif. – The 2000 Series Tape Pac system from Emerson Electric Co. includes a 1/2-in. magnetic tape drive that can work "in virtually any environment," according to the firm.

The standard Tape Pac system consists of the Model 2005 tape drive and the Model 2004 Tape Pac, which was designed to protect the tape in a noncomputer room environment, Emerson said.

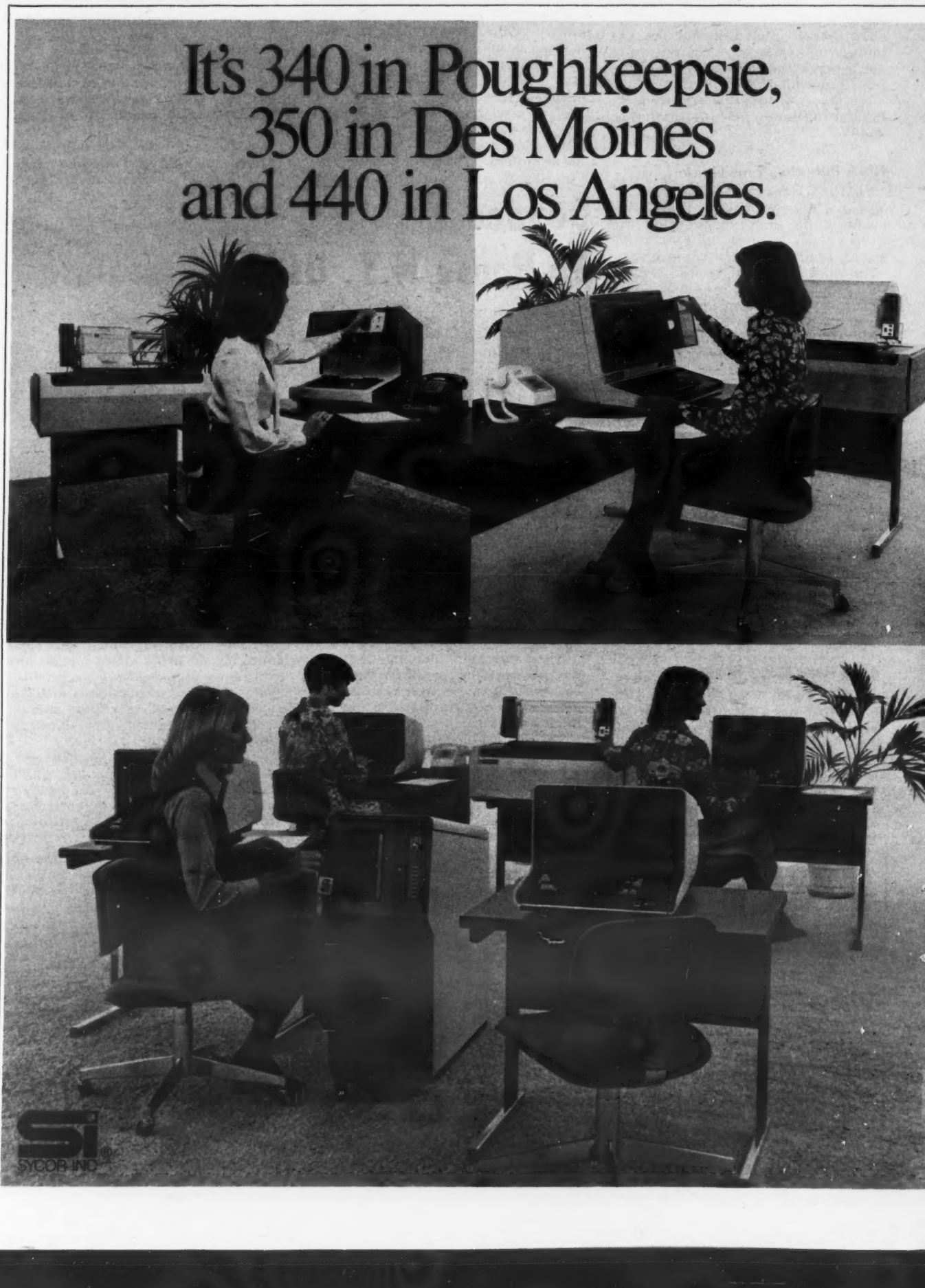
The system is plug-to-plug compatible with conventional tape drives using industry standard tape formatters, either PE or NRZI, the vendor said.

Read/Write Speed

The Model 2005 has a bidirectional read/write speed of 25 in./sec and a search/rewind speed of 240 in./sec. No reel motors or associated servos are needed, Emerson said.

Recording densities for the 2005 include 200-, 556-, 800-, 1600- or 3,200 bit/in. It offers 7- to 9-track NRZI (556-, 800 bit/in.) or 9-track PE (1,600 bit/in.) recording.

The Model 2005 tape drive costs $2,295. The Model 2004 Tape Pac costs $70 in volume quality from the firm at 3300 S. Standard St., Santa Ana, Calif. 92702.



Cuts Nurses' Paperwork

Hospital's System Guards Against Medication Errors

SAN FRANCISCO – A computerized information system is helping to guard against wrong medications, misinterpreted doctor's orders and overlooked treatments at Franklin Hospital here, according to George Monardo, president of the hospital.

Most mistakes made in patient hospital care come in the administration of medication, either through omission or by a mistake in transcription, Monardo said.

These are exactly the sort of errors the hospital's Technicon Medical Information System (MIS) is designed to prevent, Monardo said. The dedicated system combines an IBM 370/155 processor and software written in part by physicians and nurses.

When a doctor orders medications or intravenous fluids with medications for a patient at Franklin, his orders are entered directly into a CRT by light pen.

These orders are processed by the computer and displayed and printed at the appropriate nursing station and in the pharmacy, where medication is prepared.

Traditionally, a nurse would transcribe the doctors' orders onto a cardex, complete the appropriate color-coded medication card, send the information down to the pharmacy, note the completion of the orders and then file the chart. The information would then be passed along to the next shift, to the third shift and so on throughout the patient's hospital stay.

Signals Nurses

Franklin Hospital's MIS, however, automatically handles the information and signals nurses when to administer the medication. It also aims at insuring the pharmacy has prepared the medication exactly as the physician has ordered it.

When the nurse records into the computer that she has administered a pill or injection, the patient is charged at that moment. No charges are made for drugs that a patient does not receive.

The key to the system is the video matrix terminal (VMT), through which a doctor or nurse enters patient care information and calls up various displays.

The screen visually presents a list of patients, specific patient-care data, lists of drugs, specific orders and lab tests.

Doctors and nurses, in turn, can use this information to send instructions to various hospital departments. Instructions for medication, for example, simultaneously go to the pharmacy and the nursing staff.

Special instructions, such as emergency orders, allergies, legal procedures for addictive drugs or special intravenous solution mixtures, are printed directly in the pharmacy on gummed labels which go directly onto the bottles, jars or tubes.

"The MIS system keeps everything in a 'now' mode," Lois Jahn, director of nursing said, "There is no chance of a nurse administering a medication that has been discontinued or carrying out an obsolete order. Changes are made instantaneously within the system without fear of the nurse or ward clerk processing them erroneously."

Cuts Paperwork Time

Approximately 75% of a nurse's time has traditionally been spent on paperwork processing, and the MIS system has cut that time to less than 25%, Jahn said.

"Charting medications alone has been reduced by three-quarters," she said.

Among the 160 nursing personnel and clerks who use the MIS system and the 75 nursing attendants who use it "to some degree," acceptance of the MIS system has been almost unanimous, she added.

"We've never met a person we couldn't teach to use it," she said.

"The quality-assurance factor is the main benefit of MIS other than greater quality of care," Jahn said.

"One can write and process a page of orders in five minutes instead of 25.

"You know everything's been done that has to be done, there is no chance of a mistake, and you have more time for actual nursing instead of clerking," she said.

The MIS system also assures that a patient will not have to remain in the hospital longer than necessary because of being poorly "prepped."

For example, if a patient gets fed at the wrong time, treatment can be delayed 12 hours, which is another day's stay. Where dietary orders may have been lost in transmittal before, the MIS system guards against such misplacement, saving money for both patient and the hospital. Lost or misplaced orders are a thing of the past.

Further, malpractice liabilities are reduced by the MIS system, according to doctors using the system.

Because the system automatically signals nursing when a medication has not been given and because video and visual warnings are signaled by the system in pharmacy, the chances of a malpractice situation arising are lessened.

Ansco Offering Disk Free to Customers

GARDENA, Calif. – American National Supply Corp. (Ansco) is offering a free Ansco Data Diskette to authorized diskette buyers within companies that have diskette equipment either installed or scheduled for installation before March 31.

The diskette is compatible and interchangeable with diskettes used in the IBM 3740 series and comparable units, Ansco said.

The Ansco Data Diskette is said to be fully initialized and factory-certified for immediate use. The disk surface has been burnished and overcoated to give increased durability, the company said.

A bonded waffle lining protects the diskette from contamination.

The diskette will be sent in response to either written requests or toll-free telephone requests (800-421-1270; California collect: 213-532-7780).

The offer is limited to one diskette per customer and expires March 31.

Ansco is at 1243 W. 134th St., P.O. Box 2259, Gardena, Calif. 90247.

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And, with its 16k bytes of programmable memory, the Model 350 not only retrieves data, but maintains and updates files—and even generates reports.

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Mini Bits

Okidata Matrix Printer Designed Mainly for Minis

MOORESTOWN, N.J. – Okidata Corp. has a 132-column matrix printer designed primarily for minicomputers which can be desktop- or pedestal-mounted.

The 125 line/min printer has a print head that utilizes 22 pin drivers.

The unit costs $2,500 from Okidata at 11 Gaither Drive, Moorestown, N.J. 08057.

TI Calculator Programmable

DALLAS – The SR-56, a 100-step, 10-memory programmable calculator with an algebraic operating system, allows the user to perform up to 25 scientific and statistical operations, according to its vendor, Texas Instruments, Inc. (TI).

Designed for users who need to solve repetitive problems or explore multiple options within single problems, the hand-held unit costs $179.95.

TI is at P.O. Box 5012, Dallas, Texas 75222.

Measurex Introduces System 1500

CUPERTINO, Calif. – The Measurex Corp. System 1500 for paper processes has color video display, digital sensors and all-core memory.

A typical system with 32K memory, operator's station, a scanner and two or three sensors ranges in price from $250,000 to $300,000, according to a spokeswoman.

Memory is expandable and the number of sensors and scanners can also be increased, she added from One Results Way, Cupertino, Calif. 95014.

Modcomp Mini Users Form Group

FORT LAUDERDALE, Fla. – Owners and users of Modular Computer Systems, Inc. (Modcomp) minicomputers have been invited to join a recently formed independent worldwide users group.

Known as Modcomp Users Exchange (Muse) International, the group held its first meeting here recently, according to newly elected President Ken Wiley of Lawrence Berkeley Labs.

The group can be reached at Modcomp, 1650 W. McNab Road, Fort Lauderdale, Fla. 33309.

MBD Chassis Expands Novas

ORANGE, Calif. – MBD Systems, Inc. has an expansion chassis for Data General Corp. Nova minicomputers.

The $875 chassis has 3/4-in. spacing between six slots to eliminate contact between components and adjacent boards, MBD said from 981 N. Main St., Orange, Calif. 92667.

For Firm With Many Products

Mini Manages Beauty Supply Inventory

By Esther Surden
Of the CW Staff

N. MIAMI BEACH, Fla. – A turnkey mini system is relieving the inventory control problems of a beauty supply firm here which must keep a large number of hard-to-keep-track-of items on hand for customers who wait until the last minute to reorder.

Selecting a system was a fairly elaborate procedure, according to Alan Olkin, owner of Atlantic Beauty and Barber Supply Co. Olkin, a former vice-president of Datacraft Corp., was familiar with computer procedures, but didn't want to get involved with the hardware and programming himself.

"I have a different business to run right now," he said, "so I wanted to deal with a company that would be able to take my overall design, implement it and give me a solution to my problem."

Atlantic considered all the major minicomputer vendors before choosing the Computer Management Corp. (CMC) system. Various firms such as Hewlett-Packard, Digital Equipment Corp., Data General Corp. and IBM were invited to present proposals. Systems houses were contacted on the basis of leads or recommendations from the hardware firms, Olkin said.

Hardware vendors were ruled out because he would have had to hire a programmer for applications programming Olkin said. "With an additional programmer on the payroll, the system would have cost much more" than it did, he continued.

The CMC mini was chosen because the vendor had implemented several of the systems previously. The System HD consists of a Digital Computer Controls CPU with 65K bytes of memory, two 10M-byte Diablo disk drives, a 300 line/min printer from Odec Computer Corp. and seven Infoton, Inc. CRTs. It cost the firm about $60,000, and software cost an additional $15,000.

Atlantic wanted a system that would take away the inefficiencies of manual operation, but not radically upset the company's daily workings.

In the beauty supply business, Olkin said, salesmen in the field take orders from customers. Items must be shipped to the professional beauty shops within two days.

Had to React Faster

Customers are mostly artists and not concerned with inventory control, Olkin explained. But if they run out of a certain hair tint today, they need it tomorrow to meet appointments. Therefore, Atlantic needed to react to orders faster than it had previously.

Also, a great number of items had to be controlled. "In product areas, like tints, that are manufactured under different numbers by six different companies, there may be 40 different colors. Each one of these must be handled as a separate line item," he continued.

The firm had to know exactly how inventory broke down. The on-line inventory control system, updated as each order comes in, gave the company that necessary capability, Olkin said.

A batch system or a type of service that accumulates the information off-line and then feeds it on-line was rejected because the inventory would always be behind.

Payroll was the first application to go on-line in May of 1975, Olkin said. The inventory control/accounts payable package followed in September.

The package "includes everything from putting in the order to checking credit limits, to checking for past-due customers," he said. The system determines whether an order should go on credit hold and allows picking slips to be run or held depending on the requested delivery date by the customer.

Some minor changes are being incorporated into the system, he added. Since the changes are made in Interactive Basic, they are easily implemented, Olkin said.

Training of existing personnel took the form of giving them a few days of hands-on experience with the system before it went on-line. "The machine prompts the user with each question such as 'name, address, phone, owner's name, terms, credit limit.' Then we simply cleared the file and started putting in the real information." The users found the system easy to learn, Olkin said.

General ledger is expected to be on-line by May, Olkin said. The system has not only saved the firm money, but will allow the firm to grow, Olkin said. It can be expanded well beyond its present capacity, he added.

PDP-11T55 Has Floating Point For Fortran IV Applications

MAYNARD, Mass. – A disk-based PDP-11 system designed for Fortran IV operations and incorporating a CPU with solid-state memory has been introduced by Digital Equipment Corp. here.

Called the PDP-11T55, the system includes the PDP-11/55 processor, fast floating-point processor and 16K or 32K of bipolar memory, according to a DEC spokesman.

The 11/55 processor is similar to the firm's 11/50 but uses solid-state memory instead of core. The floating-point processor is a revised version of the processor used on the PDP-11/70 minicomputer, the spokesman said.

The 11T55 system is configured for "number-crunching" operations where maximum Fortran execution speed is required, DEC said.

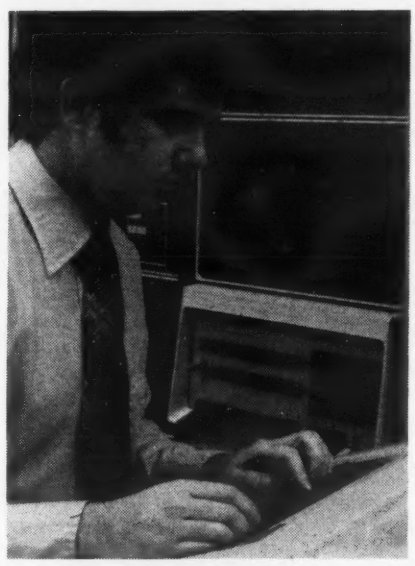
The system can also be used for industrial control, educational and engineering computation and statistical and scientific analysis applications, the spokesman added.

The PDP-11T55 is 25% to 50% faster than its nearest competition in the small- to medium-scale fields, according to benchmarks submitted by users, DEC said.

Operating under DEC's RX-11M operating system, the PDP-11T55 uses twin disk-pack storage. The system uses Fortran IV-Plus language, an extended version of Ansi Fortran IV, the firm said.

A PDP-11T55 system with 16K of memory, twin disk packs and floating-point processor costs $61,000. A 16K PDP-11/55 with the floating-point processor is available separately for those who wish to configure their own systems for $47,900.

The PDP-11T55 and the PDP-11/55 will be available in May from DEC in Maynard, Mass. 01750.



DEC PDP-11T55 System

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System Eases Tie-Ups on N.J. Turnpike

By Ann Dooley
Of the CW Staff

NEW BRUNSWICK, N.J. – A computerized traffic surveillance system is alerting drivers on the New Jersey Turnpike to traffic jams that loom ahead and directing them to alternate routes.

The $5 million system is based on three Digital Equipment Corp. PDP-11/40s, one at the New Jersey Turnpike Authority's control center here and two in the field.

The center's processor controls the speed and traffic instruction signs which indicate new routes or precautions that drivers should take; the minis in the field send signals through a communications cable to the main processor.

"The 'dual-dual' roadway was opened in 1966 and, as of the first of this year, the traffic surveillance system has been operating with a great deal of success," according to Jerry Kraft, deputy traffic engineer for the turnpike authority.

The system functions to maximize use of the roadway, minimize delay, maintain a smooth flow of traffic, rapidly detect incidents, provide emergency routing data, improve roadway performance and accumulate traffic data for future planning and roadway monitoring, Kraft said.

The dual-dual roadway consists of two three-lane roadways running north and two three-lane roadways running south. There is an outer roadway for all vehicles and an inner one for cars only; only in emergency situations can trucks use the inner roadway.

The turnpike was built with such a traffic surveillance system in mind, Kraft said. Both roads were made strong enough to withstand the weight of trucks and, at the time of building, detectors were implanted in the road to allow the system to recognize the type of vehicle.

The roadway detectors are so sensitive they will operate in heavy snow or under another foot of asphalt, according to the turnpike authority officials.

If a vehicle has already gone past all the possible rerouting interchanges, signs above the roadway display the computer-determined speed limit and a warning of what's ahead, such as an accident, ice, snow or fog.

If an accident occurs, a trooper calls for help, follows the least congested path designated by the computer and tries to clear the road.

Because the other roadway in the dual-dual system is then in danger of being congested with the additional load, traffic is diverted back to the first roadway after bypassing the accident.

Traffic that enters from interchanges is diverted to another roadway and rerouted around the tie-up. The system covers a length of 36 miles between Interchanges 9 and 14.

A vehicle hits detectors at half-mile intervals. The detectors send a pulse into the cabinet, where each is held and gathered for one minute; the accumulated data is then sent to the main processor.

The main processor determines what signals have to be displayed and transmits the instructions back through the cable.

The traffic surveillance system will not be used for speed enforcement, Kraft said, because individual vehicles are not monitored – only the accumulated traffic flow in durations of one minute. But it can indicate to police the average speed of traffic in a given area and show where enforcement may be necessary, he added.

Businesses' Use of Minicomputers Attributed to Doubling of Salaries

By Nancy French
Of the CW Staff

NEW CARROLLTON, Md. – When one looks at the increases in wages that have occurred in the past 20 years, it is not surprising businesses have turned to minicomputers to boost productivity and remain competitive, John N. Ackley, president of Digital Computer Controls, Inc., said here recently.

According to the U.S. Bureau of Labor Statistics, compensation per man-hour in U.S. industry increased more than 100% in the last decade while at the same time, the cost of small computer systems decreased almost 90%, he said.

This hardware trend Ackley attributed to the rapid improvement in component technology.

"In the last 20 years we have moved from vacuum tubes to germanium transistors to silicon transistors to ever-larger integrated circuits," he said.

At the rate we are going, we should be able to get about 100,000 transistors on a chip by 1980 and 1 billion transistors per chip by 1990, he said.

We in the industry have been very poor forecasters of our own industry, he said. He recalled the first computer conference predicted that the card-calculating punch would fulfill the nation's computation needs for good.

The machine being described was a combination of an IBM punch and tabulator that required many seconds for a basic operation.

Later, even IBM was concerned about the 650 system, hoping that at least 50 units would sell. "More than 5,000 sold," he said.

The fact that the customers of the computer manufacturers are smarter in their fields of endeavor than the computer manufacturers has been well recognized for decades, he said.

Users Finding Applications

We in the industry have been concentrating on producing smaller, cheaper and more powerful easier to use computers.

The people who purchase these computers are the ones who are finding new applications every day, he said.

The trend toward distributed computer power is now firmly established, he said. Customers have learned the direct user of the computer power has the most interest in proper operation of the system.

Further, distributed systems eliminate communication delays that occur with a large remote computer and also minimize the data entry problem, he said.

Trend to Interactive Systems

There is a very definite trend toward interactive systems used to capture data at the source, eliminating the separate keypunch operation.

This not only cuts the cost of data entry, but also reduces errors by placing responsibility for correct data in the hands of the user who has a direct interest in data accuracy.

The trend toward decentralization of data processing is further enhanced by the availability of higher level languages such as Basic, Cobol and RPG, for example, for small computer systems.

Users can write their own software to fit their requirements and update it to improve it or to respond to change, he explained.

Small computers are making a dent in time-sharing, too, according to Ackley.

Bank System Makes U.S. Debut

NEW YORK – Arbat Systems Ltd. has introduced in the U.S. a mini-based banking system designed to automate international banking and foreign exchange operations.

The system permits international bankers to have direct access to their positions in the money markets, Arbat said.

The system includes Digital Equipment Corp. PDP-11 series minicomputers; a disk drive system; up to 60 Arbat terminals said to be enhanced versions of the Hazeltine 1200 CRT; and General Electric Terminet hard-copy printers.

Software for the system includes the Arbat Interactive Multiuser System, a proprietary operating system; and Swift, a message-switching system for banks, Arbat said.

System features include display of current open positions and exposures of the currency being traded.

Arbat can automate an entire internatinal bank including loans and deposits, all accounting, commercial banking and foreign exchange for about $1 million, a spokesman said.

Arbat is located at 61 Broadway, New York, N.Y. 10004.

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Distributor Housed in Caves

Mini 'Goes Underground' to Track Food Inventory

KANSAS CITY, Mo. – When a food distribution center here tried to keep track of 60 million pounds of food, 1,200 trucks and about 700 railroad freight cars going in and out each month, it turned to a dedicated minicomputer to do the job.

The center, operated by Space Center Kansas City, Inc., uses natural limestone caves located 80 or more feet underground and enlarged to over 1.2 million square feet of usable storage space to house its warehouse operations.

The size of the paperwork load is the reason the firm installed an automated warehouse system from General Automation, Inc., a spokesman said.

The computer system consists of an 18/30 central processor with 8K words of core memory, three 512K-word disk drives, a 300 line/min printer, one console, one remote teletypewriter and a General Electric (GE) Terminet T300 for forms output.

The configuration is sized specifically to Space Center's needs, based on the number of customers for whom they store, the number of different items stored for each customer, the number of transactions for each and other data.

Custom Data Base

System software is all Macro Assembler, and application programs are basically text editing and file management routines that provide a data base custom-designed for public warehousing. It includes a fully buffered multiterminal operating system.

The entire system, which is priced beginning at $55,750, was installed here in late 1974.

A redundant manual system was discontinued before the end of the year.

"We've cut our clerical time by at least 25% using the computer system, a spokesman said and we now use only two people to do that workload," a spokesman said.

As each customer shipment arrives at the Space Center warehouse, all information on it is entered into the computer via a combination bill of lading and warehouse receipt input form typed in by one of the clerk/secretaries.

This includes customer identification number; the date of the receipt; customer name and address; the route to be used for shipment; freight bill number; rail car or truck identification and seal number; customer reference number; and, finally, all data on the warehouse item and lot numbers, quantities and shipment weights.

"This information forms the data base from which all succeeding transactions are handled by the computer," the spokesman continued. Our inventory is tracked automatically and updated as new shipments arrive or as products are distributed from here.

"Given the Amdahl alternative, our DP dilemma dissolved.

"We were out of CPU capacity with our 360/65 and 370/145, and service to our users was deteriorating. The chilled water was already in place for the 370/168 we planned to install, and we could see CPU saturation developing again.

"The computer center pays its own way at Texas A&M, and we had a clear mandate for a better DP solution. Amdahl provided it with a single system.

"Our 470V/6 is running ten times the work of our 360/65, and it's doing it at significant savings to our users.

"It's going to handle our growth through 1980, and it's letting us open up new avenues of computing possibilities.

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Dr. Dick B. Simmons
Director, Texas A&M University
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End of Time-Sharing, Purchase of Own Unit Brings Firm Savings

By a CW Staff Writer

KANSAS CITY, Mo. – Can an in-house desktop minicomputer replace a time-sharing service and save money? According to R.C. Blattenberg of National Fidelity Life Insurance here, the system already has.

An IBM 5100 is helping National Fidelity develop experimental premium rates and test their effectiveness. Located in the actuarial department, the portable unit is used sporadically by the staff to develop new premiums based on mortality, interest and expense rates, Blattenberg said.

Previously the work had been done on the firm's IBM 360/40. The company then switched to time-sharing and now estimates that, depending on the amount of utilization, the basic cost of the 5100 is equal to the minimum cost of time-sharing.

"Everything above that cost we get for free," Blattenberg said.

Developing premiums to charge for various kinds of ordinary life and disability insurance coverages can take man-years because of the variables, he said. Reserves and dividends compound the considerations involved.

With the mini the firm "can define new ideas more precisely, make large premium calculations and have the answers right away, rather than waiting a day or two while the work is passed through our computer system."

The portable unit with both APL and Basic, 48K bytes of memory, a printer and an adapter to hook it into the firm's 360/40 cost approximately $20,000, Blattenberg said.

National Fidelity's staff has had a minimum amount of training on the system, which has been in operation since December and seems to be working out well, Blattenberg said. Downtime is not a problem with the machine, "no more than the initial bugs" one can expect with the installation of a new computer, he added.

The firm is considering using other 5100s to write proposals for both individual and group life and disability policies, as well as for inventory control of the different types of policy forms and records maintained in the home office, Blattenberg said.

Mini-Based 'Teller' Handles Around-The-Clock Banking

Special to Computerworld

MILFORD, Ohio – The human teller who used to handle all transactions at the drive-in window has now been replaced in some banks by a plastic card, a series of pushbuttons and a 24-hour-a-day automatic teller connected to a dedicated mini.

The system was developed by the Teller-Matic Systems Division of the Mosler Safe Co. here. In 1964 the company began research on the concept which then was called "Robot Teller." The system was revamped over the years to emerge in 1973 as a completely automatic teller run by a PDP-11 minicomputer from Digital Equipment Corp.

The bank customer sets the system in motion by inserting his valid plastic identification card into the appropriate slot. The Teller-Matic cover lifts, presenting the customer with a panel of pushbuttons, marked according to banking procedure such as "deposit," "withdrawal," etc.

The customer enters his personal memory number which accesses the computer file and lights only those pushbuttons pertaining to his accounts with the bank. He then proceeds to conduct his business by means of buttons.

Built-In Safeguards

The system has built-in safeguards to protect the bank and the customer. A person may not access an account simply because he holds a plastic identification card. He must know the correct four-digit memory number to accompany the card.

If he inserts the plastic card into the Teller-Matic, but gives the wrong number, the card will be captured. The bank can then hold the card or release it after having marked it to show that it was used incorrectly. Should the customer try to use the card and wrong memory number again, the card will be captured and held.

The Teller-Matic is not only safe but efficient, Mosler said. The customer is guided, step by step, through every banking procedure. A message panel asks questions appropriate to the transaction at hand and concludes by reminding the customer to take his identification card.

The customer is told if he has exceeded his credit limit or how to retrieve a captured identification card. He is also asked to verify each transaction when that transaction is completed.

Making Deposits

To make a deposit into the Teller-Matic, the customer presses the deposit button, enters the total on the console, puts the deposit into the envelope provided and drops the envelope into the deposit slot. The automatic teller locks the door after the envelope, checks to ensure that the envelope is in the slot and then drops the envelope into the machine's safe after stamping a serial number on it.

The system holds more than 1,000 $10 and $20 bills to be doled out, one at a time, when a customer files for a withdrawal. Before bills are issued, they pass through a sensing device which guards against two bills being counted as one because they were stuck together. Should two bills be stuck, they are dropped into the machine's reject bin. The customer receives and is charged only for the amount he requested.

As each bill is dispensed, its designation, denomination and the amount yet to be paid shows on the panel. The customer thus knows how much of his withdrawal is still to come. He must remove each bill from the automatic teller before the next bill will be issued.

As each transaction takes place, the system checks the identification card and the credit limit of the customer's account, accepts and posts all deposits, transfers or withdrawals and updates each account affected by the transaction. Communication between the customer and the Teller-Matic is handled by the DEC computer.

In addition, the machine can enter the bank's computer system without human coding or card punching, restart automatically after a power failure and correspond directly with the bank's mainframe computer. The system has a 5,000-account memory for updating and capturing of cards.

In addition, the machine prints a memo for the customer after each transaction and makes a duplicate memo of the transaction for the bank's audit trail or bank action. The complete record of all transactions is available on both memo paper and the punched tape which is produced by every transaction. Thus complete, cross-referenced information about each transaction is assured.

Bank employees are also guided step by step. A detailed panel, coupled with input and output terminals, permit employees to obtain all current data on every transaction processed by the machine.

The operator may change any file in computer memory simply by entering the change in the customer's computer file.

Updates Card

In the case of the on-line model, the changes may be made directly by the mainframe computer. After changes have been made, Teller-Matic automatically updates the customer's card during the next transaction by reading and changing the magnetic stripe on the back of the plastic card.

The system is driven by a PDP-11/05 processor with 4K 16-bit words of core memory and 65,000 16-bit words of disk memory. An 8K executive program is maintained on the disk with the rest of the disk available for application support.

The minicomputer gives Mosler the flexibility and speed of communication needed to adapt the automatic teller to on- and off-line systems. With the off-line system, a paper tape reader punch is provided for primary output, backup or transmission.

A telephone line ties the on-line Teller-Matic to the bank's central processor. Aside from that, the on-line system uses all hardware used in the off-line system.

The packaged system costs the banks approximately $35,000 and is in operation nationwide, Mosler said. Banks in the Midwest that have the system include Central Trust Co. in Cincinnati, Ohio, and the First National Bank of Louisville in Louisville, Kentucky.

Many of the system's advantages are provided by the random-access memory which permits assorted Teller-Matic programs to be stored, then called into core during processing. The memory also holds programs designed to guard against use of counterfeit identification cards.

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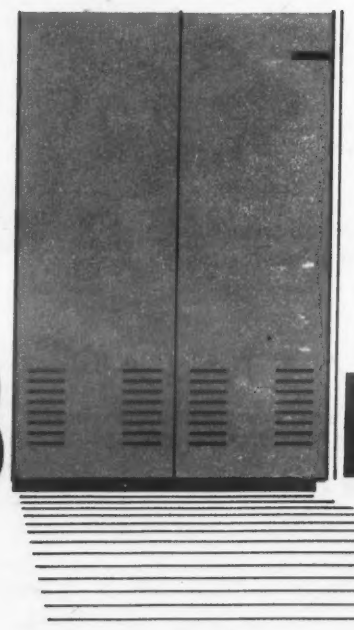

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Please note that the key caps in this photo are intentionally blank. All System 700 key functions are programmable, thus, specific key assignments are made to suit each application.

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COMPUTER INDUSTRY

CI Notes

Burroughs Forms Division To Handle Office Products

DETROIT – Burroughs Corp. has formed an Office Products Group made up of the former Business Forms and Supplies Group and two recently acquired subsidiary companies, Graphic Sciences, Inc. and Redactron Corp.

Redactron shareholders approved the acquisition.

The group will handle engineering, manufacturing and marketing responsibilities for Burroughs' range of business forms and office supplies, document encoding, signing and protecting equipment and graphic communications and word-processing equipment.

Wyly to Sell Gulf to CDC Unit

DALLAS – CC Leasing Corp., a subsidiary of Control Data Corp.'s Commercial Credit Co., has agreed in principal to acquire Gulf Group, Inc., a subsidiary of Wyly Corp., for investment.

The acquisition would be effected through cancellation of a $30 million loan made by CC Leasing to Gulf Group in 1973. That loan is secured by a pledge of capital stock of Gulf Insurance Co.

Marines Select Scan-Data

NORRISTOWN, Pa. – Scan-Data Corp. has received an initial order valued at over $4 million from the U.S. Marine Corps to supply its 2250/2 key-entry systems and related services.

The Marine Corps has an option under the contract to order additional equipment and services beyond the initial amount and up to approximately $3.8 million.

Supershorts

Memorex Corp. has been awarded a $1.9 million order to supply its Model 677 disk drives to Digital Equipment Corp. The 677 is Memorex's OEM version of IBM's 3330-1 and 3330-11.

– – –

University Computer Co. (UCC) has discontinued negotiations for the sale of its banking division to Boeing Computer Services and signed an agreement in principle to sell the division to Optimum Systems, Inc.

– – –

Tratec, Inc. has expanded its marketing and service facilities in Canada through Tratec Canada Ltd., located in Toronto.

– – –

Datapoint Corp. has created an OEM Marketing Group which will offer the firm's complete line of computers, peripherals and terminals to OEM manufacturers.

In Competitors' Views

OEM Mini Area May Be Tough for HIS

By Molly Upton
Of the CW Staff

Honeywell Information Systems (HIS) may well face a tough time in the OEM market with its recently announced Series 60 Level 6 [CW, Jan. 26], other mini makers said in a *Computerworld* survey. However, it should have an easier time in the end-user market, they said.

HIS has a few strikes against it in the OEM area, they noted, with the principal one being an intermittent track record that has created a credibility gap about the seriousness of this latest mini OEM effort, they said.

In addition, the firm probably no longer has a sales force oriented to this market, they said, and questioned the level of software support that will be supplied.

At what level is the new HIS series competitive? None saw any direct threat to its line.

Dick Vivian, marketing manager for 16-bit minis at Interdata Corp., said when HIS dropped out of the OEM product marketplace after having offered the 516 and 316, it essentially left a lot of people "high and dry," and all those original OEM customers went elsewhere.

However, on the positive side, most said they thought HIS would have an easier time selling to the end user. Dave Stein, vice-president of marketing for Computer Automation, Inc. (CAI), said the move makes sense since it expanded the firm's product offerings to its end users and wondered why other mainframers had not moved more into the mini area.

HIS "might compete with Digital Equipment Corp. much more aggressively than it has, but principally on the high end of the end-user rather than OEM area," he said.

There are probably a lot of DEC PDP 11/45s talking to HIS Series 60s, he said, and Honeywell should get some of that business with the Level 6.

Selling to the end user rather than to the OEM will be easier for HIS since its sales force is normally calling on end users, Herb Richman, Data General

(Continued on Page 37)

Users, OEMs Order Level 6s; HIS Building OEM Market Force

By a CW Staff Writer

FRAMINGHAM, Mass. – Honeywell Information Systems (HIS) has received orders from both OEMs and end users for its recently introduced Series 60 Level 6 minicomputers [CW, Jan. 26].

Roughly 60% of the orders, in terms of units, have come from OEMs; over 50%, in terms of value, have come from end users, according to William Shipman, HIS' national marketing director of minicomputers.

About 70% of the pending orders are from installations that already have HIS gear, he said, adding some orders are coming from large end users who buy in a manner similar to OEMs.

Shipman expects orders during the next two years to be spread among internal use, end users and OEMs.

Building Up OEM Force

HIS is building up its OEM force, which will be separate from the end-user marketing arm. There will be joint selling between the mini salesmen and the general-purpose sales group, Shipman said.

HIS "hasn't really been stressing OEM in recent years," he admitted. There is "a great deal of inertia that has been built up with other products in the OEM marketplace, and that may make it a little slow building up our own OEM business in some locations," he added.

"But there's enough business, enough OEM business and new projects out there that we find quite a reception to someone the size and stature of Honeywell entering the OEM marketplace again. A lot of them are looking for our field service capability," he said.

Explaining the past lack of activity in the OEM area, he said "with the announcement of the 700, most recent development activity has been aimed primarily at the end-user marketplace, with packaged systems that support our large-scale systems and provide distributed processing capabilities within our large-scale product lines.

"It is in fact true that we haven't been stressing the OEM marketplace in recent years," Shipman said.

The initial models of the Level 6 are priced in the range of the Digital Equipment Corp. PDP-11/04 and feature performance in the range of the PDP-11/35, Shipman said.

HIS has a number of OEMs with which

(Continued on Page 39)

Remote, Raw-Power Services Should Grow 25% Annually: IDC

WALTHAM, Mass. – The remote, raw-power services industry should grow about 25%/year to nearly $1.8 billion by the end of 1979 compared with an estimated $715 million at year-end 1975, according to International Data Corp. (IDC) figures published in *EDP Industry Report* (EDP/IR).

Slightly more than half of this growth will come from remote batch rather than from interactive time-sharing, the market research firm said.

But remote, raw-power services is only a part of the total computer services industry, the report said. Preliminary IDC estimates indicated revenues from all computer services in 1975 totaled about $3.17 billion.

Remote autotransaction services accounted for another 25% of 1975 revenues and is expected to grow even faster, reaching nearly 40% of the total by year-end 1980, EDP/IR said.

GE Leads Pack

Breaking down the current remote, raw-power supplies, the report indicated General Electric's (GE) Information Services Division led the pack in 1974 with a 15% share of the market.

CDC's Service Bureau Corp., not counting major autotransaction services for hospitals, banks, etc., was second with 11% of the market, according to the report.

Tymshare, Inc. and Computer Sciences Corp. tied with 6%, while National CSS was 5%, again not including autotransaction services.

Observing the trend by vendors to diversify their services, such as adding software tools and data base capability, EDP/IR remarked that, although " 'plain-vanilla' raw computer power will remain a healthy market in this decade, other sub-industries – autotransaction services, facilities management, maintenance, etc. – will grow faster."

In examining IBM's announcement of Virtual Storage Personal Computing (VSPC), the newsletter said it looks as if VSPC's "major impact (besides on the DP manager looking to justify 'IBMness' or a switch to VS) will be on the remote, raw-power service firms – if not head to head in today's marketplace, at least in lost potential."

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COMPUTERWORLD
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Former Head Says at U.S. vs. IBM

Systems Mart Exit Came as Surprise to RCA Division

By Edith Holmes
Of the CW Staff

NEW YORK – RCA's decision to leave the computer systems business "came as a complete surprise" to the president of the corporation's DP division when the announcement was made in September 1971.

Testifying before the court hearing the U.S. government's antitrust suit against IBM here recently, Joseph William Rooney added that, to his knowledge, no member of the computer systems group participated in the decision to exit from the DP marketplace.

The group's management was simply informed of the action taken by the RCA board of directors on the same day the rest of the world learned of it.

Rooney, who is now executive vice-president of Itel Corp.'s data services group, had left IBM after 19 years in the sales and marketing force of the corporation to join RCA in 1969. He said prior to agreeing to change companies, he received assurances from the management of computer systems and of the corporation that RCA was commited to remaining in the systems business.

RCA management did believe substantial investments would have to be made – on the order of $500 million from 1969-1975. And, Rooney noted, at the time he went with RCA, its computer business wasn't profitable and constituted only 3.5% of the total base of installed systems in the U.S.

But the corporation also believed it could catch up with IBM with its share of 68% to 70% of the market, if RCA could obtain a 10% share of the computer market.

The 10% market-share goal existed at RCA when Rooney arrived in 1969, and he said he never questioned the rationale behind it. RCA believed such a share would make it number two in the industry and was necessary to obtain profitability.

Rooney said he still believes the larger market share would have meant a larger customer base or lower manufacturing and marketing costs to RCA on a per-unit basis.

In addition, profitability would have eased customer apprehensions about going with any company other than IBM.

But he also told the court he never understood why RCA equated market share with profitability.

Rooney said he believes today that a 10% market share wasn't then and isn't now necessary to be in the black.

No action by IBM caused RCA to leave the computer systems business, he added.

Paid Attention to IBM

However, RCA had to pay attention to every action IBM did take in the computer industry, he suggested, since it was determined to have its products compatible with IBM's 360 series and was sensitive to IBM's pricing and marketing practices and to its future product development.

And, with regard to compatibility, "since it was copying what IBM had done," RCA usually had to wait until IBM carried out its plans, he added.

Specifically, IBM's Fixed Term Plan (FTP) instituted in May 1971 and the announcement of its 370/145 in September 1970 impacted RCA's actions in the marketplace, since FTP's lowered prices eliminated RCA's 10% to 15% price/performance advantage over IBM, he said.

Rooney told government attorneys that when IBM introduced its 370/145 eight days after RCA announced its RCA Series in September 1970, RCA believed IBM had timed this announcement deliberately to meet competition in systems from RCA.

In addition, the system cost 5% to 10% less than RCA expected it would, and this lower price undercut that of RCA's comparable mainframe – the RCA 6.

At the same time, IBM selected an 18-month rather than the more common 12-month delivery schedule used with its 370/155 and 165.

When Rooney was questioned by lawyers for IBM, however, the court learned RCA later discovered IBM had not deliberately undercut its RCA Series and specifically its RCA 6 with the 145 announcement.

A corporate vice-president of marketing for IBM, James Johnson, joined RCA in 1971 and, when asked, told RCA management IBM had not introduced semiconductor memory prematurely, nor had it changed the price of the 370/145 following RCA's announcement of the prices for its RCA Series, Rooney said.

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RAYTHEON

Rivals Say OEM Mini Area May Be Tough for HIS

(Continued from Page 35)

Corp.'s (DG) vice-president of marketing, agreed.

HIS also has a base of mainframe customers who are looking at other vendors' minis for networks. These may prefer to have one mainframe supplier, he said.

Vivian observed Honeywell has special capabilities in instrumentation and process control, which it can apply to front ends, he said, adding this would be classified more as turnkey systems than as OEM sales.

Impact of Track Record

There was some disagreement about the impact of HIS' intermittent track record in minis on the end-user marketing.

Vivian said users typically don't know HIS has been in and out of the arena.

But Jay Kear, vice-president of sales at General Automation, Inc. (GA) said he doesn't think the firm will be a threat in either the end user or OEM markets.

HIS has been in and out of the OEM market, and the end user doesn't think HIS will continue to be around, he said.

Vivian said he expects HIS to be a factor in new OEM business, but doubts it will pull away any firm's current customers.

"It's awfully tough to get out of the business, shuffle and then get in it again," he said.

"If HIS can put together a total offering of software and maintenance, it will fight as hard for new business, but it will have to prove itself," Vivian said.

End-user-oriented firms are notoriously unprepared to sell in the OEM marketplace, CAI's Stein said.

Richman said he thought it would be difficult for HIS to reenter the OEM business and gather a sales base.

HIS' approach to the mini market seems to be the same as that of Texas Instruments, Richman commented. "It comes in when times are good and goes out when times are bad. I don't know what to make of it," he said.

Richman questioned the extensiveness of HIS software. "The real world today in mini business is not only hardware and cost but also the tremendous amount of software you have to offer," he said.

HIS has less software for its Level 6 than Data General Corp., DEC and Hewlett-Packard Co., he said. However, he added, he doesn't know if HIS will have a campaign of monthly announcements.

Citing the price schedule, Stein said, HIS "has never been a factor in the OEM market, and this won't make it one."

If the firm talks about OEM, "I think it's lip service more than anything else. It may be it has a desire internally. Management may want OEM to get manufacturing costs down so it can meet the plan," he said.

Richman said the line was probably geared to compete with DG's Nova 3- and 2-type product, but was not quite as price-competitive.

Stein remarked that, if HIS wants to compete in the OEM market, it will have to either cut prices or come up with some "spectacular" volume discount on the order of 50% to 60% to get in the game with DG's Nova 3, he said.

Generally DEC and DG offer quantity discounts of 40%, he said, so HIS would be only marginally competitive there. "I frankly don't think it has the kind of profit margins to tolerate that kind of discounting, so it would really be buying the business," he said.

The HIS offering is not going to be competitive with Texas Instruments and DEC in the low end of products where CAI competes, Stein added.

Reactions to the technical aspects of the line varied. Vivian lauded the microprocessor bus approach, saying that is one technique that will have to be used by others in the future.

Kear of GA said his initial reaction was that the HIS minis will not be competitive with GA's line of LSI units in terms of their architecture, modularity and processing techniques.

Two prospective customers had deferred decisions on GA products until they looked at HIS', but both bought GA, he said.

One industry executive said that one reason why Level 6 was without a virtual memory operating system was to avoid impacting the Series 60 base. Another reason was that such items take time. Probably the Level 6 will be aimed at the OEM or the user who does much of his own software, he said.

"I do feel it's a very strong product offering, however, and the Honeywell name and product reputation is going to carry it very well," he said.

There is a basic conflict, Kear said, since the HIS line is packaged like an end-user device, but is really OEM-oriented. For instance, typical OEMs don't need the fancy enclosure, but the end user does need items such as controllers, power and cooling units not packaged in the CPU.

Richman wondered about the importance of a position in the mini marketplace to the overall Honeywell corporation. "I'm hard-pressed to be convinced there will be enough revenue in this market to be meaningful to the corporation," he said.

"Right now, it's fashionable to be in the small computer business," but Richman added, "I would never sell HIS short."

"I always worry about guys who have the clout and power of an organization that large, but I don't think they're going to be a threat to any of the popular minicomputer makers," he said.

3000 Quota Shipped At HP as Study Ends

SANTA CLARA, Calif. – Hewlett-Packard has resumed full-quota shipments of its HP 3000 minicomputer after a 30-day reliability study during which shipments dropped to half quota.

The study was initiated after the 3000 came under the auspices of the firm's General Services Division, according to Ed McCracken, general manager.

A reliability task force set up a test in the factory to determine under controlled experimental conditions whether there were any problems with the machine and, if so, what those problems were, he noted.

About "20 minor" faults were found such as "connectors generating noise in the system," he said.

The HP 3000 minis already in the field will be corrected during regular preventive maintenance visits, he said.

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Edited by Patrick Ward, this supplement will be filled with application stories and "how-to" tutorials on the ways you can save money choosing and acquiring hardware. We'll look at used machines, minis for offloading applications, and enhancing your systems with independent vendors' memory and peripherals. We'll show you ways to decide how many peripherals you need, and how to determine whether proposed enhancements will pay their own way. The supplement will report on what computers are moving in the used equipment market, and give you advice in looking for leasing opportunities.

If you're in the market for added computer power, you should be reading this supplement in the March 29th issue of *Computerworld*. And if you're advertising dollar-stretching hardware options, you should advertise them here. Don't miss the March 12th ad closing date. Your *Computerworld* salesman has all the details. Or, call Judy Milford at (617) 965-5800.

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Biddle: Restrictions Needed

CIA Questions IBM Satellite Filing

By a CW Staff Writer

ROSSLYN, Va. – Additional restrictions will be needed on the joint filing by IBM, Comsat General Corp. and Aetna Life & Casualty with the Federal Communications Commission (FCC) to proceed with their satellite venture, according to A.G.W. (Jack) Biddle, Computer Industry Association (CIA) executive director.

Although on the surface the proposal appears to satisfy the FCC's stated requirements that there be open interfaces and no bundling, upon "close reading, the lawyers have picked the words very selectively," Biddle said.

After the CIA board meeting Feb. 24-25, the association will decide what to file with the FCC, he said. "We're not opposing it, but we will require more definitive statements" in the proposal, he said.

For example, although the proposal said IBM and servicemen from the jointly held firm, Satellite Business Systems (SBS), will not conclude contracts for the other firm's equipment, there is nothing to prohibit them from presenting joint bundled proposals up to that point, he said.

The document stated SBS will design its system to accommodate as broad a spectrum of terminals as possible. But IBM terminals alone could qualify as a "broad spectrum," Biddle said.

Mention of interface methods indicated SBS will adhere to acceptable industry standards – but there are none, Biddle said.

Coincidentally, the proposed date for operation of the SBS system is spring of 1979, which coincides with the expiration of IBM's agreement with Control Data Corp. to stay out of the services area, Biddle said.

Centronics Planning To Acquire Supplier

HUDSON, N.H. – Centronics Data Corp. plans to acquire the capabilities for manufacturing metal parts, mechanical assemblies and accessory products through an agreement in principle to acquire Romark Machine Co., Inc.

The agreement is subject to approval of both boards of directors and certain other closing conditions, Centronics said. Terms call for 33,000 shares of Centronics stock.

Romark has been a supplier of Centronics and will become a central part of Centronics' new Fabricated Parts Division, Centronics President Robert Howard said.

Brother Industries, Ltd. of Japan will continue to supply all mechanical assemblies for Centronics' existing line of products.

For a new line to be introduced this spring, the new division will supply a portion of the metal components of mechanical assemblies, and the rest will come from Brother.

Level 6 Gaining Place For HIS in OEM Mart

(Continued from Page 35)

it has been working during the development phase of the Level 6, he said, but it takes a while to have a system integrated into new product lines of other OEMs.

It's too early to tell what type of inertia HIS will have to overcome, he added.

Committed to Both

Shipman expects there will be a balance between OEM and end-user sales; HIS is committed to both, he said.

Customers and prospective customers are looking for a new family with forward growth, he said: "They can see where we're going in the future."

The HIS product line was designed to be compatible with the future members of the family and provide more extensive offerings than those of some minimakers, he said.

Reviewing HIS' past efforts in marketing minis, Shipman noted the Computer Control Division (CCD), later known as the Systems Components Operations, handled mini marketing. This unit existed as a separate division after the purchase of Computer Control Co. (in May 1966) until mid-1971, when it was combined with data processing operations.

Mini marketing continued in various ways, he said. In some locations it was with a separate sales group, locally based, and in some cases handled by separate salesmen in the organization.

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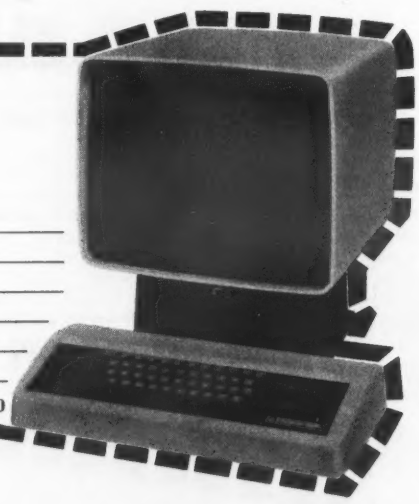

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Saul Stimler, author of *Data Processing Systems: Their performance, evaluation, measurement, and improvement* will lead this two-day seminar on measurement techniques designed to save your installation money. As well as system performance at your own installation, topics covered include: Criteria for quantifying performance, pencil and paper analysis of a system, Benchmarking techniques, Realtime, Batch and interactive time sharing systems.

Cost for the seminar, including continental breakfasts and luncheons and all course materials is $250.

New York	Hilton	May 10-11
Chicago	Hyatt Regency O'Hare	May 17-18
Wash., D.C.	Stouffer's National Center Inn	May 24-27

Data Communications Course #1010 – Practical Data Communications Systems & Concepts

Dr. Dixon Doll, the nationally recognized teleprocessing consultant will lead this two-day seminar on the newest advances in data communications. The course covers areas like SDLC, HiD-LoD, DDS, newly approved major revisions to WATS, and the impact of Satellite Carriers.

Total Cost, including workbook, reference materials luncheons and continental breakfasts is $350. Additional registrants from the same company qualify for the reduced rate of $300.

Chicago	Hyatt Regency O'Hare	Mar. 15-16

Data Communications Course #1020 – Advanced Teleprocessing Systems & Design

Also led by Dr. Dixon Doll, this course is a follow-up to course #1010. Special emphasis is given to techniques that minimize operating costs in commercial data communications networks. This three-day seminar covers procedures, approaches, and algorithms for evaluating and cost-optimizing network operations. Total cost, including an extensive set of customized course materials, is $450. Additional registrants from the same company qualify for a reduced rate of $400.

New York	Essex House	Feb. 23-25

Legal Tools for Computer Contracting and Protection

Under the instruction of Roy N. Freed, a nationally known lawyer, author and educator in the field of computer law, you'll learn how to increase your advantage in dealing with vendors that supply your installation. As well as practical discussion and review of your own contracts, subject areas covered in this 2½-day seminar include: Negotiations, Contracts, Warranties, Avoidance and resolution of disputes, Security, Fraud, Taxation, and Techniques for handling any transaction. Cost for the entire seminar, including continental breakfasts, luncheons and all course materials is $325. Additional registrants from the same company are charged only $275.

Orlando, Fla.	Sheraton Towers	Feb. 18-20
Chicago	Hyatt Regency O'Hare	May 5-7
Seattle	Airport Hilton	May 19-21
New York	Summit Hotel	Jun. 23-25

How to Increase Programming Productivity

John W. Brackett, PhD, Vice President of SofTech, Inc., will lead this two-day seminar for technical managers on the state of the art of Software Engineering. Under his direction you will learn how to: create more precise and visible analysis and design; reduce integration problems; improve software reliability; incorporate visible outputs into the software development cycle; increase programmer productivity; and improve programming management methods. Topics covered include: Structured programming; Top-down analysis, design, implementation; and Chief Programmer teams. Cost for the entire seminar, including continental breakfasts, luncheons, and all course materials is $300. Additional registrants from the same company are charged only $250.

Chicago	Hyatt Regency O'Hare	March 8-9
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Tesdata Moves to Turnkey With MS 32

By Molly Upton
Of the CW Staff

McLEAN, Va. – With its new MS32 system, Tesdata Systems Corp. is extending its approach of taking hardware measurement analysis out of the hands of the technicians and providing meaningful information to the DP manager [CW, Feb. 9], Tesdata Systems Corp. President Tom Stone said.

The 32, which Tesdata calls a turnkey system, represents a transition from an extremely technical product most people were scared of to one "where we do everything," he said.

With most hardware measurement systems, he said, users usually feel they need one person assigned to running the system and interpreting the reports. However, the 32 requires no schooling on the part of the user, he said.

The 32 is designed to make it harder for the customer to say no, Stone said. The system eliminates the two principal objections to measurement tools, which are not having a person to devote to the system and the reasoning, "we know we're not using the system 100%, so therefore we don't need to fine tune." The 32 will give management reports indicating the trend of use.

By taking test and measurement out of the realm of the technician, Tesdata expects to expand the market and predicted most other vendors will proceed along the same path.

The market for hardware measurement systems last year exceeded $10 million in revenues for the first year, Stone said. Shipments were about $13 million for the industry, he added.

Revenues should peak at about $18 million/year somewhere around 1980, he said. Revenues have doubled in the last two years and tripled in the last three, according to Stone.

Education Important

One of the keys to selling in this type of market is education about measurement, Stone said.

With the introduction of the MS series in 1975, Tesdata "made a bold attempt to change" the selling direction to one of emphasizing benefits and results rather than specifications, Stone said.

By making the systems outputs more meaningful to management, Stone said, the firm opened up the market. "Now people can understand why they should have these reports," he said.

The MS series gives exception reports and also illustrates the trend of DP use. Although previously measurement systems were sold on the basis that their use might eliminate some DP equipment, Tesdata now emphasizes them as a more effective management tool.

"DP has been run by the seat of the pants" and there is a "credibility gap," Stone said, adding he doesn't blame DP management, since it has not had adequate data on trends to make decisions.

Tesdata's products provide some idea of the trend within the industry. In 1972, the first year of existence for the firm, it introduced the Xray, which sold for $50,000 to $75,000. Tesdata's product was more expensive than others on the market, he said. "People thought we were crazy, but we sold 100 more units than anyone else," Stone said.

Then came the Tesdata 1185, which sold for $65,000 to $85,000, and "people thought we were out of our minds," he said.

Then last May Tesdata introduced its MS series ranging from $30,000 to $139,000.

The number-one seller is the top model, the 88. The average system sale is over $100,000, he said. The 32, however, will sell for between $29,000 and $66,000.

Thus the marketing trend evolved from selling on the basis of technical specifications to emphasis on benefits and results to selling a turnkey system that can provide specific types of requested reports.

Relating Other Data

The next step, Stone said, is to relate hardware measurement with other data by using accounting tools such as that provided by IBM's SMF, he said.

Tom Stone

Tesdata will be moving in this direction within the next six months, he said.

After marrying accounting data, Tesdata will turn its attention to "tackling data communications," Stone said.

Most of Tesdata's systems are in installations of the top 200 industrial firms with multiple systems, at least one of which is the size of the IBM 370/158.

Software Separate

Tesdata has spun off its software group devoted to scheduling and accounting packages and made it a wholly owned subsidiary, Software Systems Corp.

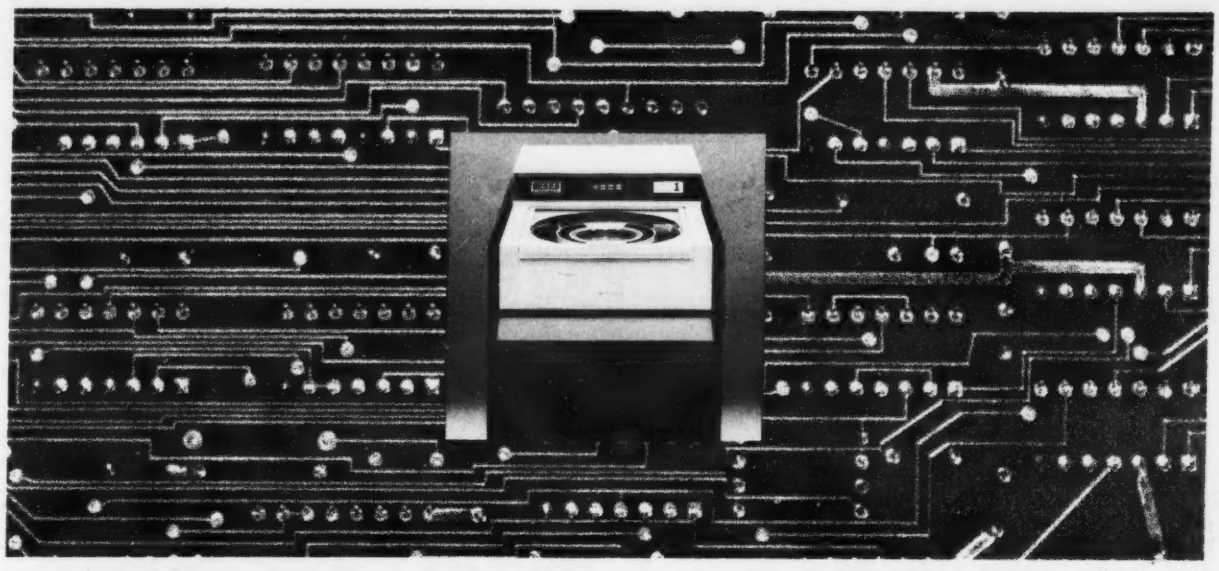
The move was intended to give the group its own management, since it was somewhat ignored by top management which was preoccupied with the fast-growing hardware sector.

The firm had a disastrous first half in terms of new orders and was also pouring money into its MS line. Revenues were $2.3 million, and the firm lost money for the six months. However, the second half helped the firm into profitable status for the year.

For this year, Stone sees revenues from $8 million to $10 million for the firm which has about 110 employees, excluding the 10 people with the software unit.

CW Photos by M. Upton

Tesdata MS 32



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Two Marketing Areas Set

Univac Consolidates Divisions

BLUE BELL, Pa. – Univac has consolidated its three international marketing divisions into two divisions.

The Asia-Americas Division's responsibilities will be portioned between the remaining Americas Division and the Europe/Asia/Africa Division (EAAD), formerly the European Division.

The Americas Division, which formerly included the U.S., Canada and Mexico, also assumes responsibility for subsidiaries in Australia, Argentina, Brazil and Puerto Rico and for Latin American distributor operations.

This division is headed by Joseph J. Kroger, vice-president and general manager, and is headquartered here.

The EAAD, which previously was responsible for marketing in western and eastern European nations, the USSR, the Middle East and South Africa, adds subsidiaries in Korea, Hong Kong and Singapore as well as distributor operations in Asia.

EAAD Responsibilities

EAAD is headed by John C. Butler, vice-president and general manager, and is headquartered in London.

E.T. Springstead, formerly vice-president and general manager of the Asia-Americas Division, has been appointed in charge of Region 1 within EAAD. It assumes marketing operations in the USSR, previously a separate marketing region within the European Division, as well as Southeast Asia and Korea, in addition to the UK, South Africa, Israel, Yugoslavia, Iran and Turkey.

Springstead succeeds John R. Harrison, who is now president and general manager of Europe and Africa, in the Office Equipment Division (OED).

In the Americas Division, Charles R. Williams has been named vice-president and general manager of Domestic Operations.

Walter Haemmerle has been appointed general manager of Americas International Operations, with responsibility for subsidiaries in Argentina, Australia, Brazil, Mexico and Puerto Rico and for the Latin American distributor operation.

John F. Scott, formerly general manager of the Asia-Pacific area in the OED, has been appointed general manager in Australia, with responsibility for both computer operations and OED operations in Australia.

Three Witnesses From Xerox Added by U.S. in IBM Trial

NEW YORK – The Department of Justice has added three more Xerox Corp. employees to the witness list for its antitrust suit against IBM, bringing to a total of six those who will tell the court hearing the case here why Xerox left the computer systems business.

Jack King, director of Xerox marketing support; Donald McKee, director of Xerox corporate development; and C. Peter McColough, chairman and chief executive officer of Xerox Corp., will take the stand as part of the government's main case, probably sometime in April.

Three others from Xerox will also appear in court then. They are Wallace B. Askins, assistant corporate controller; Rigdon Currie, a member of Xerox's planning function; and Harvey Cohen formerly vice-president of Xerox advanced systems.

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It's called *Computerwoche*, (woche is pronounced vō-kuh), and it's *Computerworld's* new sister in Germany. Modeled after its parent, *Computerwoche* serves key computer users in Europe's largest EDP market. It has an initial circulation of 21,000 · including company officers, managers and top technical people at user sites throughout the German market, as well as officers and planners at computer equipment producing companies.

Computerwoche is published by Computerworld GmbH, with a full editorial and production staff based in Munich, and it serves the German market with the same editorial excellence that has made *Computerworld* a leading EDP publication in the United States.

The market which *Computerwoche* serves is large and growing. At the end of 1974, there were 19,000 computer systems in Germany, valued at just over $5 billion, and recent market studies indicate that expenditures will be growing rapidly over the next four years. Overall user spending is expected to grow at 14% a year, and areas like terminals and communications equipment and software and services are expected to average growth rates of 25% – 30% a year.

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Trade Shows in Sweden, Italy Open to U.S. DP Manufacturers

WASHINGTON, D.C. – U.S. makers of DP equipment can participate in two U.S. Department of Commerce exhibits in northern and southern Europe within the first two weeks in May.

The department's Office of International Marketing has scheduled exhibits featuring computers, related equipment and systems in U.S. trade centers in Stockholm, Sweden, May 4-6 and Milan, Italy, May 11-15.

The most recent DP exhibitions held in these locations had off-the-floor sales of $5.5 million in Stockholm and $4 million in Milan, Commerce said.

Participation may be in either or both of the shows. Commerce said it planned them only four days apart in order to help exhibitors gain maximum exposure with a minimum of travel expense.

Commerce figures indicate U.S. DP exports are expected to increase as much as 20% annually through 1977.

The total Italian market for computer equipment was about $450 million in 1974, with imports accounting for over $250 million, of which U.S. exports held a dominant share.

In Scandinavia, the U.S. was the principal supplier of DP equipment, exporting $96.8 million in 1974, an increase of 53% over 1973, Commerce said.

In Sweden alone, investment in computer equipment from 1973-1977 is expected to reach $1 billion. The Swedish market should grow about 15% annually and exceed $245 million in 1977, Commerce said.

Additional information on the exhibits may be obtained by contacting Mike Frisby, Project Officer, Room 4225, Nordic Area, Office of International Marketing, U.S. Department of Commerce, Washington, D.C. 20230.

International News

Western Europe Thinking Small

PENNSAUKEN, N.J. – Western European countries are easing out of the mainframe computer business which requires large amounts of technical and financial resources to develop and a substantial market base to support, according to the *Auerbach Reporter*.

These countries are now concentrating on much smaller products, such as intelligent terminals, banking terminals, small business computers and key-to-storage data entry systems, the *Reporter* stated.

There have been two main reasons for Western Europe's failure to dominate the home market for minicomputers, terminals and peripherals, the newsletter said.

First, most European governments have ignored the mini and peripherals manufacturers when giving preferential orders to native DP firms.

Second, most of the 20 mini and 18 CRT makers in Western Europe have concentrated their efforts on supplying large turnkey communications networks and industrial process control systems. They have consistently ignored the European systems houses, forcing these to turn to U.S. supplies for their hardware needs.

The fight to regain the minicomputer and peripheral markets is shaping up with the four European manufacturers who are easing out of the mainframe business – Nixdorf, Datasaab, Philips and Compagnie Internationale pour l'Informatique – leading the way, the *Reporter* said.

Western European countries are now not only concentrating their resources on producing minicomputers, terminals and peripherals for their own consumption, but also for the world market, the *Reporter* concluded.

Foreign Orders & Installations

The British Railway Board has installed Software AG's Adabas data base management system on its IBM 370/145.

CNES, a French space organization, has ordered nine control and navigation microcomputers from Saab-Scania for installation aboard the three-stage carrier rocket Ariane used for the launching of telecommunications and other satellites.

The Commonwealth Scientific and Industrial Research Organization of Australia has installed a Comp 80 Utility Publishing System from Information International, Inc. for bulk printing on microfiche and to support plotting applications.

D-A Computer Services Ltd. of the UK has ordered a Univac 1100/20 to replace an ICL 1903A computer.

Volkswagenwerk AG of West Germany has ordered a Control Data Corp. Cyber 173 and two CDC Cyber graphics terminals.

Olympus Optical Co., Ltd. of Tokyo has ordered a Univac 90/60 from Nippon Univac Kaisha, Univac's Japanese marketing organization.

The USSR's Kamaz truck manufacturing complex has ordered five IPC-1000 programmable controllers developed by Industrial Solid State Controls, Inc.

Sirius Insurance Co. of Australia has installed an IBM System/32.

Control Data Corp. has installed a CDC 6600 computer system at its Cybernet service center in Rio de Janeiro, Brazil, to replace the satellite link between Brazil and the U.S. used since 1974.

UC AB, a Swedish credit agency, has ordered a Honeywell Series 60 Model 66/20 to establish a national data bank on the financial status of individuals and companies in Sweden.

Computaprint Ltd., a member of IPC Business Press Ltd. of England, has ordered a Videocomp 500 CRT typesetter from Information International to expand its typesetting capability.

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CW-2-76

Contracts

Systems & Computer Technology Corp. has received a six-year, $10 million contract from the University of Alaska to manage and operate its higher education computer system. The system will include a statewide network to provide administrative and instructional support for higher education.

GTE Information Systems, Inc. has received a $4 million contract from the Social Security Administration for a national data communications network of about 100 IS/1000 programmable magnetic tape terminals.

C3, Inc. has been awarded a contract from the U.S. Army for $5.6 million to supply an unlimited number of data entry, key-to-disk minicomputer systems over the next three years.

National Sharedata Corp. has received a facilities management contract extension from Citizens National Bank of Evansville, Ill.

Digital Equipment Corp. has received a $1 million contract from the state of West Virginia for 13 PDP-11 minicomputers to support instructional and administrative functions at all 15 schools in the state college system.

Storage Technology Corp. has received a three-year contract from BASF Aktiengesellschaft of Germany for high-density tape equipment. An initial order for about $2.6 million of equipment has been received.

Floating Point Systems, Inc. has been awarded a one-year, $1 million contract from Petty-Ray Geophysical for delivery of AP-120B floating-point array processors to be used in seismic signal processing systems used in energy resource exploration.

Memorex Manager: Creativity Needed to Sell in COM Market

SANTA CLARA, Calif. – Marketing computer-output microfilm (COM equipment requires a creative approach, Donald Kelley, manager of COM products at Memorex Corp. here, said.

Recently Memorex assigned a dedicated systems-oriented sales force to its COM products. Previously COM was sold as part of a line of Memorex products.

Selling COM equipment is more complex than selling peripherals, he said, as the decision to buy usually involves not only the DP manager but the user departments as well. "By the time we've made a sale, we've touched on every aspect of the customer's operations," he said.

Often users have applications for COM equipment, but cannot identify the need beyond the fact that they use a lot of paper, he said.

However, when the firm's operations are examined, it frequently happens that a COM unit can not only save on paper costs, but also in other aspects of the company, such as inventory control, he said.

The COM market has been "sort of an orphan." Firms have trouble deciding whether they should be identified with the microfilm field or with the computer field, Kelley said.

There is no doubt in Kelley's mind. "The COM industry would be 1,000% better off if it sold to DP guys," he said.

Two of the other principal entrants in the COM field, Kodak Co. and 3M Co. were motivated by their media businesses, and they frequently sell to the record-keeper rather than the DP manager, Kelley said.

Memorex has been working on improved human engineering for the user as well as providing features needed from the DP viewpoint, he said.

The COM market has been growing at about 30%/year for the past two years and is estimated at around $150 million worldwide, Kelley said.

Ten-year projections call for the market to reach $3 billion, Kelley said.

Customers in Manufacturing

Past predictions indicated banks and insurance would be the large markets for COM, but 60% to 70% of Memorex's customers are manufacturers, he said. They use the COM units for inventory control and accounting applications, he said.

Now, Memorex is finding government departments at all levels are increasingly interested in COM, he said.

The government market is becoming more willing to look at suppliers other than IBM, Kelley said.

Memorex's 1603 is an on-line system and can print directly from disk to film, he said. Much of the competition is off-line, which in most cases requires software changes to write on the film, and is more expensive, Kelley said.

Memorex has been in the COM business for five years. Coding microfilm was not too different from tape, and it was a natural evolution of its peripheral product line, he said.

Memorex markets principally to first-time COM users, whereas some of its competitors seem to concentrate on stealing each others' customers, he claimed.

To further expand the COM market, Memorex is launching seminars around the world during October to help educate users on COM. "We are trying to take the mystique out of COM," Kelley said.

Electronics Report Describes China Mart

SAN FRANCISCO – A report on China's electronics market and industry has been prepared by Fred Glynn/Marketing Research to aid the marketer preparing to do business with that country.

The report contains a forecast of the market potential for 116 types of electronic components and 129 types of equipment as well as information on business practices, legal considerations and trading organizations.

A listing of China's 60 most important manufacturing facilities is given, in addition to information on its capability in numerous phases of production of electronic products such as telecommunications, computers, microwave equipment, semiconductors and tubes.

The report is available for $65 from 2200 Sacramento St., Suite 1206, San Francisco, Calif. 94115.

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Codex Replies

NEWTON, Mass. – Modem maker Codex Corp. said it will "take all necessary actions to protect its legitimate patent rights" and will "vigorously defend its customer [being sued by Milgo Electronic Corp.] against any suit or other harrassment by Milgo."

Codex said it believes the Milgo Model 96 Multimode infringes its patent on signal structures for Double Side Band-Quadrature Carrier modulation.

Milgo earlier filed a declaratory relief suit against Codex asking the court to declare Codex' patent invalid and noninfringed.

Packet-Switched Net Passes First Tests

By Andrew Lloyd
Special to Computerworld

PARIS – Europe's first packet-switching network, Cost 11, recently passed its first-phase acceptance tests here.

The work, completed on time and within budget, formed the first part of a $5 million project financed by 10 European countries plus the European atomic research body, Euratom.

It will eventually link research centers in the 10 countries and faces all the problems of reconciling the different requirements of the various public carrier authorities.

By April the network, similar to Arpa (already tied in to two European countries), will link five research centers – two in Italy and one each in Britain, France and Switzerland.

The consortium of software houses producing the network was led by the French company Sesa and the British-based Logica. They demonstrated the capabilities of the system by simulating the international operation on a two-node network.

The two nodes, built around the French Mitra 15 minicomputer, are connected by several telephone lines with speeds of 48,000 bit/sec. The modular software was developed in a high-level language and was designed to allow for expansion of the network to include other similar systems, some of which already exist on a national level.

The network is being built around the HDLC transmission protocol and is compatible with IBM Synchronous Data Link Control.

The 10 countries involved are Britain, France, Italy, Norway, Portugal, Sweden, Switzerland, Yugoslavia and Germany and Holland, which decided to join the scheme only last year.

Though the project is financed by these countries, the whole program is under the auspices of a commission of the European Economic Community.

The commission is known to favor harmonization of transmission regulations in the different European nations.

Executive Corner

■ Roy L. King and Harry L. Eberly have been elected senior vice-presidents and Milton E. Cooper has been elected vice-president of Telex Computer Products, Inc., a subsidiary of Telex Corp.

■ Edward E. Marshall has been named vice-president of finance and administration for the North American computer operations of Honeywell, Inc.

■ Frank R. Lautenberg, president and chief operating officer of Automatic Data Processing, Inc., has also been named chief executive officer. Josh C. Weston and Bruce K. Anderson were appointed executive vice-presidents.

■ Emmanuel J. Otis has been named senior vice-president of West Europe marketing operations for Control Data Corp.

■ F.L. (Mike) Harvey has been named president of U.S. operations for University Computing Co.

■ Robert W. Tillson has been appointed vice-president of marketing at Compu-Serv Network, Inc.

■ Elbert Lee Brown has been named vice-president and general manager of MRI Systems Ltd.

■ L.C. Whitney has been elected executive vice-president and a member of the board of directors of National Data Corp.

■ John Hansen has been named vice-president of programming for Information International, Inc.

■ Milt Goff has been named vice-president of Microdata Puerto Rico, Inc.

■ G. Eric Jackson has been appointed vice-president and general manager of Codon Corp.

■ Leon J. Greene has been named vice-president and center manager of National Sharedata Corp.

■ D. Howard Lewis has been appointed president of Orbis Systems, Inc. following the resignation of John J. Ring.

■ Bill Baker has been named vice-president of MOS operations at Monolithic Memories, Inc.

■ Paul L. Klein Jr. has been named vice-president of marketing at Florida Software Services, Inc.

■ T. Wallace Wrathall has been appointed vice-president of finance and administration, secretary and treasurer of Comshare, Inc.

Earnings Reports

APPLIED DIGITAL DATA SYSTEMS
Year Ended Nov. 30

	1975	1974
Shr Ernd	$.86	$.64
Revenue	17,806,000	9,456,823
Tax Cred	.....	829,000
Earnings	3,242,000	2,396,492
3 Mo Shr	.29	.12
Revenue	5,981,000	3,038,652
Spec Chg	.....	a160,000
Earnings	1,106,000	436,317

a-Adjustment of tax-loss carryforward.

ELECTRONIC ASSISTANCE
Three Months Ended Oct. 31

	1975	1974
Shr Ernd	$.27	$.09
Revenue	11,033,000	9,631,000
Disc Op	(8,000)	18,000
Tax Cred	205,000	42,000
Earnings	511,000	167,000
9 Mo Shr	.32	.31
Revenue	27,570,000	29,050,000
Disc Op	(37,000)	31,000
Tax Cred	211,000	180,000
Earnings	598,000	582,000

ENNIS BUSINESS FORMS
Three Months Ended Nov. 30

	1975	1974
Shr Ernd	$.34	$.46
Revenue	14,242,586	14,933,376
Earnings	768,268	1,069,092
9 Mo Shr	.83	1.29
Revenue	41,575,771	44,881,364
Earnings	1,902,817	3,014,359

COMPUGRAPHIC
Three Months Ended Dec. 27

	1975	1974
Shr Ernd	$.86	$.72
Revenue	21,636,000	17,932,000
Earnings	1,601,000	1,311,000

COMPUTER AUTOMATION
Three Months Ended Dec. 31

	1975	1974
Shr Ernd	$.41	$.19
Revenue	7,778,125	5,114,202
Earnings	780,393	320,613
6 Mo Shr	.73	.31
Revenue	14,364,522	10,251,184
Earnings	1,371,966	515,901

ADVANCED MEMORY SYSTEMS
Three Months Ended Dec. 26

	1975	1974
Shr Ernd	$.46	$.12
Revenue	9,667,000	7,503,000
Tax Cred	557,000	150,000
Earnings	1,160,000	306,000

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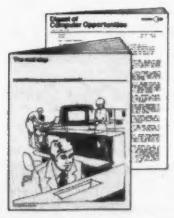

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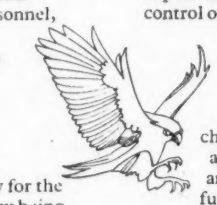

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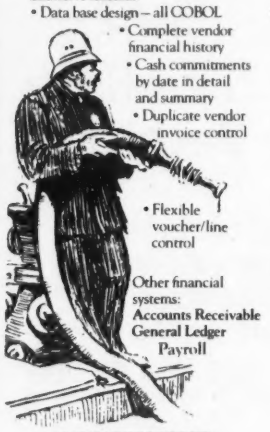

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DP Earnings Help Pull CDC Out of the Red in 1975

MINNEAPOLIS – With a boost from sizable improvements in its computer business, Control Data Corp.'s 1975 earnings reached $41.5 million or $2.44 a share compared with a restated loss of $1.2 million or 18 cents a share in 1974.

Computer business profit totaled $13.1 million compared with a loss of $35.6 million last year, which was incurred largely as a result of special charges on several large development contracts, such as that with the Union Bank of Switzerland, discontinued operations and projects, the firm said.

Results benefited from acceptance of the Cyber 170 systems and continued growth and improved profitability in services, according to William C. Norris, CDC chairman.

"Computer business results also were favorably affected by a higher level of computer systems converted from lease to purchase by customers and from a continued strong performance in aerospace operations," Norris said.

"These gains made up for softness in peripherals and business product markets and from the adverse effect of foreign currency exchange rates during the second half," he added.

Computer business revenues rose 13.2% to $1.25 billion from $1.1 billion last year.

Rental and services revenues rose 15.9% to $631.3 million compared with $544.9 million in 1974.

The growth in this area was boosted by services and peripheral equipment leased to users of other makers' computers, he added.

Outright DP sales rose 9.6% to $586.9 million from $535.7 million in 1974 and reflected the higher level of purchase conversions for systems and record aerospace volume, CDC said.

Earnings of CDC's financial services subsidiary, Commercial Credit Co., declined 17.4% to $28.4 million from $34.4 million last year.

Although results were improved because of lower interest rates, the deficit in international finance operations increased and casualty and health insurance lines suffered the "worst year in their history," Norris said.

Because of a change in accounting policy to expense as incurred R&D costs, the 1974 results for the fourth quarter and year were restated downward by $4.5 million and nearly $5 million respectively.

Commercial Credit's net worth at year-end was reduced by $79.7 million to $506.9 million as a result of an accounting change to carry marketable equity securities at market value.

For the 1975 fourth quarter, CDC earned $8.7 million or 50 cents a share compared with a loss of $20.5 million or $1.31 a share in the year-ago period.

Profits from the computer business were $5.5 million compared with a loss of $28.5 million while Commercial Credit's results declined to $3.2 million from nearly $8 million.

Most of the increase in sales for the year occurred in the fourth quarter, which rose to $174.3 million from $130.2 million.

Fourth-quarter computer results include $3.7 million from the sale of two plants.

Prime Reports First Profitable Year

FRAMINGHAM, Mass. – With revenues up 74%, Prime Computer, Inc. scored its first profitable year in its four-year history.

Earnings, including a tax credit of $370,000, totaled $692,000 or 34 cents a share in 1975 compared with 1974's loss of $532,000 or 26 cents a share when there was a $9,000 tax credit.

Revenues reached almost $11.4 million compared with $6.5 million last year.

In the fourth-quarter, income before special credits more than doubled, to $123,000 compared with $47,000 in the year-ago quarter.

Including tax credits, the firm earned $281,000 or 14 cents a share compared with $14,000 or 1 cent a share in the same 1974 quarter.

Revenues for the three months rose 67% to nearly $3.5 million compared with $2.1 million in the year-ago period.

Prime is "embarking on a significant buildup in marketing manpower, especially in the U.S. We have set aggressive sales and profit objectives for the new year and expect 1976 to be another significant growth year for Prime," according to Kenneth C. Fisher, Prime's president.

The firm's systems are "aimed at the distributed DP market and were designed and developed to coexist with big computer mainframes by off-loading at any level required," he said.

RCC Six-Month Results Increase Despite Loss in Second Quarter

PALO ALTO, Calif. – Remote Computing Corp. (RCC) reported results for the first six months were up over those of the same period last year despite a loss in the second quarter.

Earnings for the six months totaled $55,000 or 8 cents a share compared with a loss of $20,000 or 3 cents a share on a restated basis in the year-ago period.

Revenues for the first half were $3.7 million, a 26% increase over the $2.9 million reported in the same period last year.

For the second quarter, RCC incurred a loss of $48,000 or 6 cents a share compared with a profit of $100,000 or 14 cents a share on a restated basis in the year-ago period.

Revenues in the quarter were a little over $1.7 million compared with almost $1.7 million in the year-ago period.

The earnings picture in the second quarter was impacted heavily by a soft market in the thrift industry, a major sales source to RCC, and by continuing costs incurred in the development of the Burroughs B6700 computer system, the firm said.

The company anticipates an improvement in thrift industry sales and said it feels the cost problems of the B6700 are at an end with the installation of a motor generator set to stabilize power fluctuations.

Earnings Dip in On-Line Half-Year

PITTSBURGH, Pa. – On-Line Systems, Inc.'s results for both the second quarter and first half ended Oct. 31 declined from those in the year-ago periods.

Earnings for the three months dropped to about $153,986 or 18 cents a share compared with $454,112 or 54 cents a share in the same period last year.

Revenues declined to about $2.9 million compared with $3.2 million in last year's second quarter.

Earnings for the half dipped to $213,413 or 25 cents a share compared with $881,322 or $1.05 in last year's first six months.

Six-month revenues decreased to almost $5.1 million from $6.1 million in the same year-ago period.

Compared with the prior quarter, however, revenues increased 30% and earnings more than doubled, On-Line said.

Wang Earnings Jump in Two Periods

TEWKSBURY, Mass. – Wang Laboratories, Inc.'s six-month and second-quarter earnings rose 34% and 100% respectively compared with year-ago period results.

For the quarter ended Dec. 31, the firm scored record earnings of nearly $1.5 million or 36 cents a share compared with $738,000 or 18 cents a share in the same quarter last year.

Revenues rose 33% to almost $24.2 million compared with $18.1 million in the year-ago period.

For the half-year, earnings totaled nearly $2.2 million or 53 cents a share compared with $1.6 million or 40 cents a share in the year-ago six months.

Revenues rose 25% to $42.2 million compared with $33.9 million in the same period last year.

Dr. An Wang, president, attributed the improved results to the general economic recovery plus a growing awareness and acceptance of the firm's products.

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Earnings Reports

NATIONAL SEMICONDUCTOR
Three Months Ended Dec. 14

	1975	1974
Shr Ernd	$.43	$.32
Revenue	79,894,000	55,061,000
Earnings	5,659,000	3,827,000
6 Mo Shr	.83	.77
Revenue	162,280,000	130,181,000
Earnings	10,900,000	9,333,000

TAB PRODUCTS
Three Months Ended Nov. 30

	1975	a1974
Shr Ernd	$.30	$.56
Revenue	8,749,000	9,295,000
Earnings	248,000	465,000
6 Mo Shr	.54	1.02
Revenue	17,352,000	17,958,000
Earnings	448,000	849,000

INFORMATION INTERNATIONAL
Three Months Ended Oct. 31

	1975	1974
Shr Ernd	$.14	$.11
Revenue	3,509,657	2,193,910
Earnings	374,612	288,427
6 Mo Shr	.33	.29
Revenue	6,818,335	4,725,258
Earnings	852,358	737,440

BURROUGHS
Year Ended Dec. 31

	1975 (000)	a1974 (000)
Shr Ernd	$4.14	$3.38
Revenue	1,702,108	1,532,628
Earnings	164,409	131,952
3 Mo Shr	1.73	1.37
Revenue	552,293	484,082
Earnings	69,122	53,318

a-Restated.

CENTRONICS DATA COMPUTER
Three Months Ended Dec. 31

	1975	1974
Shr Ernd	$.55	$.38
Revenue	13,200,000	10,027,421
Earnings	2,600,000	1,815,542
6 Mo Shr	1.00	.76
Revenue	24,400,000	20,268,329
Earnings	4,700,000	3,628,260

MANAGEMENT ASSISTANCE
Year Ended Sept. 30

	1975	1974
Shr Ernd	$.20	$.10
Revenue	94,500,000	76,624,000
aTax Cred	2,134,000	1,769,000
Earnings	6,080,000	2,833,000
3 Mo Shr	.07	.04
Revenue	25,433,000	20,769,000
aTax Cred	1,206,000	633,000
Earnings	2,012,000	1,171,000

a-From tax-loss carryforward less a $592,000 write-off related to a 1975 settlement with Potter Instrument Co.

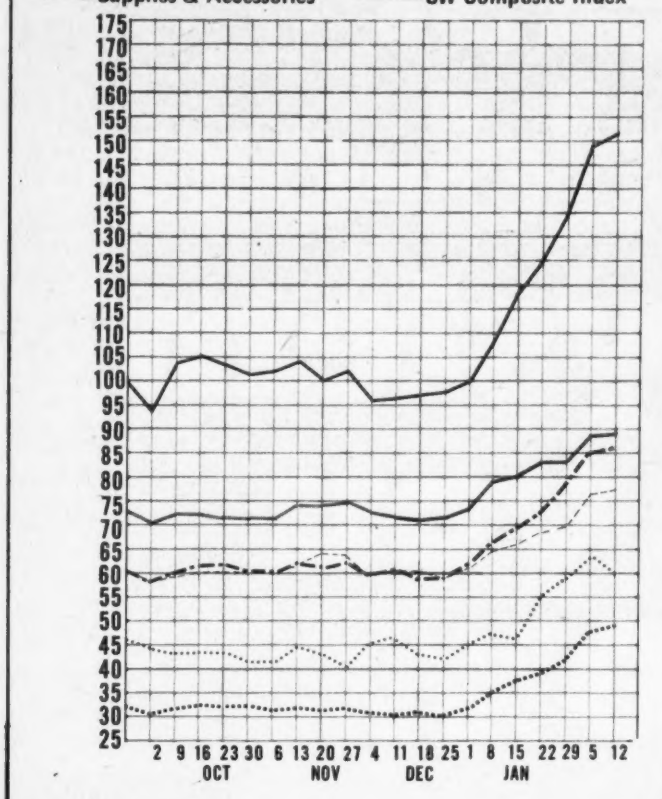
COMPUTER SCIENCES
Three Months Ended Dec. 26

	1975	1974
Shr Ernd	$.13	$.07
Revenue	54,087,000	45,797,000
Earnings	1,858,000	938,000
9 Mo Shr	.36	.17
Revenue	158,000,000	128,076,000
Earnings	5,105,000	2,379,000

DATA GENERAL
Three Months Ended Dec. 20

	1975	1974
Shr Ernd	$.37	$.35
Revenue	29,023,000	24,119,000
Earnings	3,501,000	2,816,000

COMPUTERWORLD Computer Stocks Trading Indexes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Leasing Companies
Supplies & Accessories
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TRADE*QUOTES

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, FEBRUARY 11, 1976

All statistics compiled, computed and formatted by TRADE*QUOTES, INC. Cambridge, Mass. 02139

COMPUTER SYSTEMS

EXCH		1975-76 RANGE (1)	CLOSE FEB 11 1976	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	62-109	102 1/8	-4 1/2	-4.2
O	COMPUTER AUTOMATION	2- 17	14 7/8	-1 1/2	-9.1
N	CONTROL DATA CORP	11- 26	26	- 1/8	-0.4
N	DATA GENERAL CORP	10- 49	47 1/4	-1	-2.0
O	DATAPOINT CORP	6- 32	32 1/4	+ 1/4	+0.7
O	DIGITAL COMP CONTROL	1- 4	3 3/4	+1	+36.3
N	DIGITAL EQUIPMENT	46-166	162 7/8	-1	-0.6
N	ELECTRONIC ASSOC.	2- 5	4 5/8	+ 3/8	+8.8
A	ELECTRONIC ENGINEER.	5- 10	10	0	0.0
N	FOXBORO	23- 42	37 3/8	- 5/8	-1.6
O	GENERAL AUTOMATION	4- 14	9	- 5/8	-6.4
O	GRI COMPUTER CORP	1- 1	1	+ 1/4	+33.3
N	HEWLETT-PACKARD CO	58-120	111 1/2	-4 1/8	-3.5
N	HONEYWELL INC	22- 54	53 1/2	+ 5/8	+1.1
N	IBM	158-264	255 1/4	-8 1/2	-3.2
O	MANAGEMENT ASSIST	1- 1	1 3/8	0	0.0
O	MEMOREX	1- 15	14 1/4	-1	-6.5
O	MICRODATA CORP	2- 20	19 5/8	+1	+5.3
O	MODULAR COMPUTER SYS	5- 19	11 1/2	-1 1/2	-11.5
N	NCR	15- 39	29 1/4	-1 3/8	-4.4
O	PRIME COMPUTER INC	2- 7	5 1/2	- 1/4	-4.3
N	PERKIN-ELMER	16- 33	26 3/4	+ 1/4	+0.9
N	RAYTHEON CO	26- 59	51 1/4	- 1/4	-0.4
N	SPERRY RAND	26- 49	46 1/2	0	0.0
O	SYCOR INC	5- 25	23 1/2	-1 1/2	-6.0
A	SYSTEMS ENG. LABS	1- 9	8 1/8	0	0.0
N	VARIAN ASSOCIATES	7- 18	16 7/8	+ 1/2	+3.0
N	WANG LABS.	7- 17	17 1/8	+ 3/8	+2.2

LEASING COMPANIES

EXCH		1975-76 RANGE (1)	CLOSE FEB 11 1976	WEEK NET CHNGE	WEEK PCT CHNGE
O	COMDISCO INC	1- 7	6 1/4	- 7/8	-12.2
A	COMMERCE GROUP CORP	2- 4	2 3/4	0	0.0
A	COMPUTER INVSTRS GRP	1- 2	1 1/4	0	0.0
M	DATRONIC RENTAL	1- 1	3/8	0	0.0
A	DCL INC	0- 1	3/8	-	-12.4
N	DPF INC	3- 7	6 1/4	- 3/8	-5.6
O	EDP RESOURCES	1- 2	1	0	0.0
A	GRANITE MGT	1- 5	4 1/2	0	0.0
A	GREYHOUND COMPUTER	2- 4	3 7/8	- 3/8	-8.8
N	ITEL	3- 9	8	- 3/8	-4.4
N	LEASCO CORP	4- 11	10 3/4	+1 1/2	+16.2
O	LEASPAC CORP	1- 1	1/4	0	0.0
O	LECTRO MGT INC	1- 1	1/8	0	0.0
O	NRG INC	0- 4	1/8	- 1/8	-50.0
A	PIONEER TEX CORP	2- 8	7 1/4	- 1/8	-1.6
A	ROCKWOOD COMPUTER	1- 1	1/8	0	0.0
N	U.S. LEASING	7- 14	10	- 3/4	-6.9

SOFTWARE & EDP SERVICES

EXCH		1975-76 RANGE (1)	CLOSE FEB 11 1976	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 1	7/8	- 1/8	-12.5
A	APPLIED DATA RES.	1- 13	2 3/8	- 1/8	-5.0
N	AUTOMATIC DATA PROC	29- 65	64	- 3/4	-1.1
O	BRANDON APPLIED SYST	1- 1	1/8	0	0.0
O	COLEMAN AMERICAN COS	4- 6	5	0	0.0
O	COMPUTER DIMENSIONS	2- 6	5 1/4	+ 5/8	+13.5
O	COMP ELECTION SYSTMS	3- 7	5 1/2	- 1/4	-4.3
O	COMPUTER HORIZONS	1- 1	1/2	0	0.0
O	COMPUTER NETWORK	1- 4	3 1/2	+ 7/8	+33.3
N	COMPUTER SCIENCES	2- 6	5 3/8	0	0.0
O	COMPUTER TASK GROUP	1- 1	7/8	0	0.0
O	COMPUTER USAGE	2- 4	3 1/4	+ 1/2	+18.1
O	CONSHARE	2- 4	2 3/4	- 3/8	-12.0
O	COMTEN INC	1- 7	6 1/2	+1	+18.1
O	DATATAB	1- 2	1	0	0.0
A	ELECT COMP PROG	1- 1	1/8	0	0.0
N	ELECTRONIC DATA SYS.	11- 28	16	+ 1/2	+3.2
O	INFONATIONAL INC	1- 1	1/8	0	0.0
O	IPS COMPUTER MARKET.	1- 1	3/4	0	0.0
O	KEANE ASSOCIATES	2- 3	2 7/8	+ 1/8	+4.5
O	KEYDATA CORP	2- 4	3 1/4	0	0.0
O	LOGICON	3- 5	4	- 1/4	-5.8
A	MANAGEMENT DATA	1- 3	1 7/8	- 1/8	-6.2
A	NATIONAL CSS INC	6- 21	20 3/8	+1 7/8	+10.1
O	NATIONAL COMPUTER CO	1- 1	1/8	0	0.0
A	ON LINE SYSTEMS INC	8- 17	19 3/8	+ 1/4	+1.3
N	PLANNING RESEARCH	2- 6	4	0	0.0
O	PROGRAMMING & SYS	1- 1	5/8	0	0.0
O	RAPIDATA INC	2- 5	3 3/4	- 1/2	-11.7
O	REYNOLDS & REYNOLD	10- 24	18	+ 1/2	+2.8
O	SCIENTIFIC COMPUTERS	1- 1	3/4	0	0.0
O	SIMPLICITY COMPUTER	1- 1	1	- 1/8	-11.1
O	TYMSHARE INC	7- 27	26	+ 3/8	+1.4
A	URS SYSTEMS	2- 4	3 3/8	0	0.0
N	WYLY CORP	2- 5	3 7/8	- 3/8	-8.8

PERIPHERALS & SUBSYSTEMS

EXCH		1975-76 RANGE (1)	CLOSE FEB 11 1976	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	4- 12	11 3/4	- 3/8	-3.0
O	ADVANCED MEMORY SYS	1- 9	7 3/4	- 5/8	-7.4
N	AMPEX CORP	3- 8	7 3/8	+ 3/4	+11.3
O	ANDERSON JACOBSON	1- 3	2 3/8	- 3/8	-13.6
O	BEEHIVE MEDICAL ELEC	1- 5	4 1/4	+ 5/8	+17.2
A	BOLT,BERANEK & NEW	5- 13	7 3/4	+ 7/8	+12.7
N	BUNKER-RAMO	4- 8	6 1/8	+ 3/4	+13.9
A	CALCOMP	3- 7	5 5/8	- 1/4	-4.2
O	CAMBRIDGE MEMORIES	1- 5	3 1/8	+ 5/8	+25.0
N	CENTRONICS DATA COMP	7- 35	34 1/2	+4 3/8	+14.5
O	CODEX CORP	15- 38	26 1/2	-1 1/2	-5.3
O	COGNITRONICS	1- 2	3/4	- 1/8	-14.2
O	COMPUTER COMMUN.	1- 2	2 1/2	+ 3/8	+17.6
O	COMPUTER CONSOLES	3- 7	5	- 1/4	-4.7
A	COMPUTER EQUIPMENT	1- 2	2	+ 1/8	+6.6
O	COMPUTER MACHINERY	1- 2	1 7/8	- 1/4	-11.7
O	COMPUTER TRANSCEIVER	1- 2	1	0	0.0
O	COMTEN	2- 7	6 1/2	+1	+18.1
N	CONRAC CORP	12- 30	23 1/2	+1 3/8	+6.2
O	DATA ACCESS SYSTEMS	1- 3	2	- 1/4	-11.1
O	DATA 100	5- 16	8 1/8	- 5/8	-7.1
A	DATA PRODUCTS CORP	2- 9	8	+ 3/4	+10.3
O	DATA TECHNOLOGY	1- 3	1 7/8	0	0.0
O	DATUM INC	1- 2	1 1/8	0	0.0
O	DECISION DATA COMPUT	2- 7	3 3/8	+ 1/8	+3.8
O	DELTA DATA SYSTEMS	1- 1	1/4	0	0.0
O	DIZAN CONTROLS	1- 1	1/2	0	0.0
N	ELECTRONIC M & M	1- 3	2	+ 1/4	+14.2
O	FABRI-TEK	1- 1	1	+ 1/8	+14.2
O	GENERAL COMPUTER SYS	1- 2	2	0	0.0
N	HAZELTINE CORP	3- 9	8 3/8	- 1/2	-5.6
N	HARRIS CORP	18- 41	40 3/4	0	0.0
A	INCOTERM CORP	3- 14	14 3/8	+1	+7.4
O	INFOREX INC	2- 5	4 1/8	- 1/8	-2.9
O	INFORMATION INTL INC	8- 16	15 7/8	- 1/8	-0.7
O	INTEL CORP	21- 95	95	+2 1/2	+2.7
A	LUNDY ELECTRONICS	3- 7	6 1/2	- 3/8	-5.4
O	MSI DATA CORP	3- 10	4 1/2	- 3/8	-7.6
A	MILGO ELECTRONICS	8- 24	17 7/8	+1 1/4	+7.5
N	MOHAWK DATA SCI	1- 6	5 3/4	+1 1/4	+27.7
O	OPTICAL SCANNING	1- 3	1 3/8	0	0.0
O	PENRIL CORP	1- 2	1 1/4	- 1/2	-28.5
A	PERTEC CORP	2- 9	6 5/8	- 1/2	-7.0
A	POTTER INSTRUMENT	2- 3	1 3/4	0	0.0
O	PRECISION INST.	1- 1	1 1/2	+ 1/2	+50.0
O	QUANTOR CORP	2- 6	5 1/8	0	0.0
O	RECOGNITION EQUIP	2- 9	8	+ 7/8	+12.2
N	SANDERS ASSOCIATES	3- 11	9	+ 1/8	+1.4
O	SCAN DATA	1- 3	2 3/8	0	0.0
O	STORAGE TECHNOLOGY	6- 17	9 5/8	0	0.0
O	T BAR INC	3- 7	7	+ 5/8	+9.8
O	TALLY CORP.	1- 5	5	+ 3/4	+17.6
O	TEC INC	1- 4	3 1/4	0	0.0
N	TEKTRONIX INC	18- 59	57 1/4	-1 1/4	-2.1
N	TELEX	1- 4	3 5/8	+ 3/8	+11.5
O	WANGCO INC	4- 15	15	0	0.0
O	WILTEK INC	1- 4	2	0	0.0

SUPPLIES & ACCESSORIES

EXCH		1975-76 RANGE (1)	CLOSE FEB 11 1976	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED SYSTEMS INC	1- 3	1 1/4	- 1/8	-9.0
O	BALTIMORE BUS FORMS	4- 5	4 3/4	+ 1/4	+5.5
A	BARRY WRIGHT	5- 9	7 7/8	0	0.0
O	CYBERMATICS INC	0- 1	3/8	0	0.0
A	DATA DOCUMENTS	29- 42	39 3/4	-1 5/8	-3.9
O	DUPLEX PRODUCTS INC	12- 25	22 3/8	+1 3/8	+6.5
N	ENNIS BUS. FORMS	5- 7	7	0	0.0
O	GRAHAM MAGNETICS	5- 11	10 1/2	+1 1/2	+16.6
O	GRAPHIC CONTROLS	8- 21	16 1/4	+ 1/2	+3.1
N	3M COMPANY	43- 69	60 1/8	-1 7/8	-3.0
O	MOORE CORP LTD	39- 51	48 1/2	- 3/4	-1.5
N	NASHUA CORP	9- 22	12 5/8	- 1/4	-1.9
O	STANDARD REGISTER	11- 20	18 1/2	+1 1/4	+7.2
O	TAB PRODUCTS CO	4- 8	6 3/4	- 1/4	-3.5
N	UARCO	17- 24	22 7/8	+ 1/2	+2.2
O	VANTER GRAPHICS CORP	4- 7	5	0	0.0
A	WABASH MAGNETICS	3- 6	5 3/4	+ 1/4	+4.5
N	WALLACE BUS FORMS	15- 25	22 7/8	+ 1/4	+1.1

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
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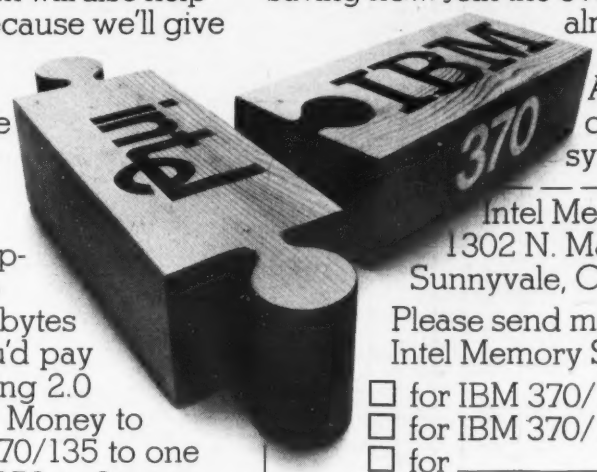

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